

# The Psychological Record

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and experimental psychology

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As presently organized THE PSYCHOLOGICAL RECORD publishes both theoretical and experimental articles, commentary on current developments in psychology, and descriptions of research planned or in progress. The journal is designed to serve a *critical function in psychology*. It therefore favors the publication of papers that develop new approaches to the study of behavior and new methodologies, and which undertake critiques of existing approaches and methods.

Articles should be prepared according to the form suggested for APA publications (*APA Publication Manual*) and submitted in duplicate to the Editor. The author cost per page is \$3.00. There is an additional author charge for cuts and special composition. Reprints are available at cost.

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## THREE BIOLOGICALLY INDEPENDENT SIBLINGS

JOHN A. POPPLESTONE<sup>1</sup>*Western Michigan University*MAE LUNDELL<sup>1</sup>*Community Child Guidance Clinic and**Child Evaluation Clinic of Washington University, St. Louis*

This report presents some psychological events in a family of three pathological adolescents and their adoptive parents. The siblings spring from three different pairs of biological parents but have shared the grossly equivalent environment of a single adoptive home from an early age.

This family is presented for two reasons. First, the particular psychopathology of its members and their relationships to one another are unusual and, therefore, of interest both clinically and theoretically. Secondly, and probably of more importance, this case is a clear demonstration of the difficulties inherent in investigating complex behavioral phenomena. The raw data are incomplete, a condition arising from the principals' resistance to self-revelation or their inability to be insightful or communicative. This incompleteness is not reflected in brevity since the materials used in this paper are extensive and varied: school reports, formal psychological reports on all members of the family except the mother, social histories of all members, diagnostic interviews of all the subjects, records of psychotherapy sessions with the oldest child, and medical and psychiatric examinations. They range in time from the original evaluations made when the children were placed for adoption to the most recent progress notes in hospital folders.

*The adoptive parents*

The most outstanding aspect of the adoptive parents of these three children is the discrepancy between their social acceptability and their psychological status, to the advantage of the former. Socially they may be characterized as approximating the criteria of middle class respectability. For example, both believe in the importance of family ties, are hard working, and have been active in church and school programs. In the words of one of the adoptive agencies, "... they were ambitious and had high standards . . ."

*The adoptive mother*

The mother was consistently resistant to clinical contacts and in-

<sup>1</sup>Formerly at St. Louis State Hospital.

formation about her is limited to observations by two social workers, some correspondence, and her childrens' descriptions of her. Apparently she is trying to control a fear of her mal-effects upon her children and is endeavoring to deny the possibility that she is responsible for their less acceptable characteristics. A quotation from a letter illustrates her attempts at denial. It must be remembered that this letter is addressed to her son, "When we adopted you children people warned us if we knew their backgrounds, even the doctors. But Dad and I said we thought environment meant more and would overcome heredity. But later years now always read heredity plays the bigger part. That if a cow is going to have a young one it will be another cow and not a horse."

Clinical observations of the mother have suggested a schizoid withdrawal. Two social workers who interviewed her describe her with such phrases as "does not appear very capable of extending herself emotionally to anyone" and "bland, tired, withholding personality." In moments of stress she becomes histrionic, weeps, and often locks herself in her room or goes away from the house and drives about in her car for hours at a time. The mother's socially approved activities resolve into a substitution of quantity of activity for involvement with others. She attempts to distract herself from self-realization and the examination of unpleasant stimuli by overproduction. This defense system is maximized in the church where she behaves in a compulsive, ritualistic, and self-aggrandizing manner.

The major projective data of the mother are twelve letters written to one of her sons. The letters, as interpreted by the authors and three colleagues (a total of three social workers and two psychologists) indicate that this mother is a pathologically egocentric person whose relationships with the world are almost entirely concerned with her personal comfort and personal satisfactions. Other people and institutions are merely adjuncts of her personality. She sees her husband as a source of financial support and as a figure to whom she can ascribe negative and depriving acts to the children.

#### *The adoptive father*

The father was also resistive to clinical contacts and has been described by social workers as a shadowy, unsubstantial individual who appears to be seeking help and to be responsive to advice but who is also subtly withholding. He seems to be the unwilling tool of the mother with little ability to hold his own against her. His psychological examination was inconclusive but the Rorschach performance suggested schizophrenia.

When their marriage was in its fifth year they, or more dominantly the mother, decided to adopt a child since they were unable to have one of their own. The cause of sterility is unknown. The father has said he submitted to the first and subsequent adoptions, "since there would be no peace unless I did."

*Robert*

The oldest child, Robert, age 19, is now resident in a state mental hospital as a result of aggressive behavior toward his parents (refusing to eat with them and threatening to kill them) and an increase in the frequency of "seizures."

The psychological examination administered on admission resulted in a WAIS IQ of 66. In the psychological report his failing responses were characterized as showing a lack of awareness of their inadequacy, a confabulatory sort of self-reference, and a non-socialized disregard for the form of the questions. The report, drawing from the projective protocols, also states, "His mother is seen as destructive and damaging in the very acts which are superficially succorant . . . she produces intense negativism on repeated stimulation from her . . ."

Robert's "seizures" eluded differential diagnosis in that there was an equivocal EEG, an inconclusive neurological picture, and a psychological test report which says, ". . . there is no evidence of contributing organic factors. Rather it would seem that in extreme stress situations he would collapse hysterically and cease to function psychologically." With a controlled regime and anticonvulsant medication the seizures have ceased.

Biologically Robert is the product of an unknown father and a mother considered by the adoptive agency to be normal. He became a candidate for adoption at birth with actual placement effected at five weeks. Although Robert was described at the time as a "thin, little baby" he was initially admired and the agency notes contain a statement that the parents were "very well pleased with him."

By the time he was of school age the picture had been modified. His mother states that his maturation was "slow" in all areas, in fact, she says that the school considered him retarded when he was in the first grade. The school recently reported that Robert was an unusual child since he was both "retarded" and "easy going, good, and quiet." They were "surprised" since his behavior was unlike other retarded children, but they never seem to have questioned their diagnosis. In retrospect, the symptomatic label of "withdrawn" would seem appropriate. He was retained in school until he reached the 7th grade at year 16.

From age 16 to 18 Robert's behavior changed. He developed from a friendly and rather passive boy into one who was sufficiently destructive to merit institutional residence.

Parental and patient reports about child rearing practices as specific to Robert indicate that there are two main categories under which the anecdotal evidence may be organized. First, the parents have substituted psychological attack for the protective aspects of parenthood. Secondly, they concomitantly capitalized on his passivity

which was noted in infancy. In the dilution of nurturance the most conspicuous example was in the area of school work. Robert reports that his mother's reactions to his requests for assistance were consistently refusals in which he was ridiculed and called stupid. The passivity appears to have been covertly encouraged. He was a quiet baby and his mother seems to have paid little attention to him. When Robert was one year of age, and a more hyperactive younger sibling was adopted, she increased her neglect of the child. The extent of a shift from neglect to active rejection is illustrated by his quotation of her remarks on his sixteenth birthday, "You aren't worth crap, you're just from an orphanage. I can turn you back. Your real mother ain't worth crap. You aren't any better." This quotation, if even minimally accurate, suggests that the mother has forcefully conceptualized this son to himself as inadequate and worthless. Such a structuring would act to encourage lower reactivity. She reinforced this cycle of unworthiness-lower reactivity-lower reactivity-further unworthiness by forcing comparison with his more skilled, active, and intelligent brother. The current result of these interactions is a symptomatic pattern centered about a dual theme of retreat from familial contact and aggressive drives toward both parents.

### *George*

The second child, George, age 18, is in the same hospital as his brother, a placement that is primarily the result of the court's opinion that his pattern of criminality reflected emotional disability. He began stealing in the first grade and with increasing chronological age developed a predilection for car theft. He has served two short terms in jail. His employment record is characterized by brief periods of employment and on two occasions he was discharged for setting false fire alarms. Once, while working in a bank, he was discharged for carrying concealed weapons. At the time of the last stealing offense the court released him to his parents with a recommendation that he be immediately committed to a mental hospital. They deferred action on this advice for a few days at which time George again stole. One feature of George's career is the failure of any authority—school, parents, police—to become seriously disturbed by his asocial behavior. This is probably the result of his facade of dependent charm, somewhat analogous to the social skills of his mother whose facade has been accepted throughout her life.

His admission psychological examination resulted in a WAIS IQ of 100 and a report of "defective social intelligence," feelings of isolation, guilt, suspicion, and of being driven to asocial behavior by forces beyond his control. These forces could not be clearly identified but evidence points to an expectation of punishment and displacement.

The school describes him as always having been rebellious, disobedient, and prone to temper outbursts. The principal writes, "...

generally at odds with peers and teachers, doing acts on impulse, he delighted in finding loopholes by which to evade responsibility."

George was illegitimate and nothing is known of his biological parents. He was considered a normal baby and entered the home with full adoptive status at the age of five weeks, the same age as his brother. Both parents in giving his history reported that he was an active, outgoing child who demanded a great deal of attention and self-direction. His high activity level was mentioned so repetitively that his mother seems to have considerable investment in this level, one that approximates her own. In a letter to him she admits preferring him to the other children, "... you were quite a dickens when you were small and I tried to give you extra love to keep you from developing into a tuffy and that's also why I encouraged you to be a minister."

George never seems to have had limits set or to have been presented with alternatives to the behavior which he spontaneously emitted. He perceives his father as the punitive and controlling parent, yet threw objects at him on several occasions. George's freedom to do this may stem from his father's essential lack of involvement with him, an attitude that was episodically permeated by mild amusement at his asocial conduct. Thus the culmination of this maternal preference and the lack of effective control in an active extraverted child resulted in an intellectually normal individual with some attractive social skills and a character disorder.

### *Catherine*

The third child, Catherine, age 17, is considered by the parents to be making an adequate adjustment. She has completed about the third grade of school and now spends her time at home. All members of the clinical team commented upon her generally infantile behavior. She has epileptiform seizures and a WAIS IQ of 71. The recent psychological report notes that "... she has ambivalent feelings about her parents. They are seen positively and are also rejected as destructive and controlling," a formulation which recalls the statement made in Robert's record.

She is the product of an incestuous relationship between her mother and maternal grandfather. For two months after birth she remained in the hospital and was then placed in a foster home. At five months her adoptive mother received her as a boarding home placement and formally adopted her at four years of age.

When this adoption took place Catherine was believed to be "mentally retarded" by the agency and thus by the parents. This label was assigned rather casually from the results of a single administration of the Cattell Infant Intelligence Scale at two years of age. She achieved an IQ of 87 under conditions which the examining psychologist reported as not maximal and in compensation for which a re-examination

in six months was recommended. There is no further testing on record for fifteen years. This score, of 87, the examiner's lack of faith in its validity, and the absence of any physical stigmata (which would be expected to be severe in a diagnosis of mental deficiency in infancy) suggest that the diagnosis was premature. Whatever the true status, the interpretation of deficiency did not appear to disturb the parents.

Generally, Catherine is noted by her parents to have been a pleasant and placid child who episodically had "temper outbursts." Denial of difficulty occurs in spite of her mother's report that Catherine has psychomotor "seizures" which she has inconsistently described as beginning from eight to twelve years of age. For her "seizures" which they call epileptic, the parents have taken Catherine to a "naturopathic chiropractor". They consult more traditional medical resources for the rest of the family.

Catherine differs from her brothers in several important respects. She has not been so grossly maladaptive as her brothers. She entered the family at five months, in contrast to five weeks, and while the boys were considered to be within normal limits and healthy at the time of adoption, Catherine was believed to be mentally defective. One result of this very early diagnosis is that her parents have never expected Catherine to take responsibility. She was free of obligations and even encouraged in non-productivity. In contrast to Robert who was criticized and ridiculed for his academic failing, Catherine's limitations were accepted. She has been so protected and so little has been asked of her that she does not show the skills that would be expected of her age and intellectual level.

It appears then, that if these parents did not actually create an individual with defective intellectual behavior, a possibility which must be considered, they have done very little to maximize the growth potential. With this overprotection however, they have managed to create an individual who is able to be somewhat secure and perhaps even to feel loved.

## DISCUSSION

The achievement of the psychopathological status of these three individuals could be explained as the operation of chance, the effect of three coincidentally defective heredities, the function of interpersonal relationships, or combinations of these factors. The ambiguities and complexities of familial life do not lend themselves to the isolation and quantification of the pertinent variables necessary for experimental control. Nevertheless their contributions are genuine in the reality situation. As such they exemplify raw data for any theory concerning the role of heredity or environment, either in isolation or interaction, in the production of adult personality. The use of heredity as an explanation of variable human behavior is, in this case as in most



others, insufficiently empirical. The procedure currently selected was an examination of what is known of the experiential biographies of these three subjects.

The children appear to have been within normal limits at the time their interactions with the adoptive parents began. These parents are seen as having reacted to actual or assumed familial characteristics in such a way as to produce different behavior, symptoms, and diagnosis in each child. If the assumption of the potency of experiential factors is made, attention can then be directed to the sources of damaging stimulation. The evidence available implies that one central, and perhaps crucial, variable is the mother's egocentric expression of her own needs. She seems to have been free to abandon constructive contacts with her oldest child and to have replaced them with destructive acts. She similarly seems to have felt little need to exert effective restraint when confronted with the asocial aspects of her second child's personality. In the case of her daughter she simply denies the difficulties. The father's behavioral impotency provided no effective check on this parasitic acting out.

The present exploration of the role of environmental experience was dictated by the law of parsimony since discrimination between "actual" or "assumed" biological characteristics cannot be effective until both the psychological and biological events are more thoroughly explored. In all families both variables, heredity and environment, are elusive and incomplete. Until such lacunae are filled the theoretician is in a dilemma. The present paper is offered as a new approach in this area. There has been a considerable amount of research on people with common biological parentage who have been raised in different environments. Perhaps investigation of individuals with different biological backgrounds and similar psychological experiences would be productive. The present family of clearly pathological subjects demonstrates the possibilities of such an approach.

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## HOW MANY WOMEN LIVE TO BE CENTENARIANS?

S. GEORGE SANTAYANA

*Jacksonville, Florida*<sup>1</sup>

The limits of the stages of human development are not clearly defined, since physiological development is influenced by varied factors. There are also individual variations in any group having the same ancestors, social and economic life, useful habits of hygiene, schooling, climate, and general physical and mental health.

The last stage of development is known as senescence. Old age, or perhaps enfeeblement, begins in some at sixty, in others at seventy or eighty, and in still others at not before ninety.

Today there are approximately twelve million people over sixty-five in the United States. By 1980 there may be more than twice as many. The proportion of aged to the total population continues to grow and this change in the age-structure implies the need for economic, social, industrial, educational, and political adjustment. It is predicted that forty-three percent of the population in 1980 will be over forty years of age—when half of the population will support the other half of the nation.

The old industrial dictum that one who has reached the age of sixty should be put on the shelf—or at least settled unobtrusively in an armchair by the fireplace—now is refuted by most scientists and by oldsters themselves.

Like many other investigators on gerontology (the science of ageing), the writer has been concerned about the increasing number of oldsters, and larger number of centenarians, and what they would mean within the next two or three decades. The decreasing number means, in a literal sense, that at least three and possibly four persons (and incidentally three out of four of the centenarians are women) of every 100,000 people in the United States will get their "second wind" and be able to take a second whack at living a happy and useful life.

This study considers women ranging from 100 to a claimed 121 years of age. These centenarians are natives of the following states: New York, New Jersey, Vermont, New Hampshire, Connecticut, Massachusetts, Rhode Island, West Virginia, Pennsylvania, Kentucky, Oklahoma, Wisconsin, Minnesota, Iowa, and Missouri. Because the study was spread over a period of fifteen years, only 245 of the original group are still alive.

<sup>1</sup>Formerly at Jacksonville University.

Each of 300 women-centenarians was interrogated for approximately seventy minutes in two sessions of thirty-five minutes each. They were all cordially interested in relating their manifold experiences of life. Of this number, 177 were widows, thirteen were legally separated before attaining their advanced stage of life, fifteen were divorced because of family make-up and housing and financial difficulties. Three were unmarried.

Wherever they live, old people take with them their own personalities, the sum of their experiences. They might contribute wisdom, skills, and mature judgment to the group they enter. Too often they do not. By and large, their background limits their resources; their experiences of youth and middle age have not adequately prepared them for old age. Much can be done, and will have to be done soon. Psychologists, sociologists, educators, physicians, and society in general will have to solve many of the common social, economic, and physical problems of old age.

If life ended at "threescore and ten," or at the point where our social security laws end it, mankind would be robbed of many of its greatest achievements. The premature death of creative minds by war, suicide, and mental and physical disease has done enough damage to human progress. It is amazing what some great artists, philosophers, and scientists accomplish in the short life-span granted to them. But we find convincing proof that the vitality of the human brain is not limited by age. Not rarely the climax of a creative life begins at an age when the average man retires from business into the pseudo-death of idleness.

This investigation definitely indicated, with very few exceptions, that these people who had approached, and passed, the century-mark could not be classed as doddering armchair sitters, by any means. A "second wind" seems to be in store for anyone who reaches the century-mark—and one can best add years to life by keeping active, having wide interests, maintaining friends and acquaintances (but few worries), and marrying at least once.

Longevity is about equally divided between agricultural people, who have used their physical resources to the utmost, and professional women, whose mental achievements seem to have fostered the aliveness which made them attain extreme old age. An example of the latter is the late Dr. Charlotte Marie Davenport, who died in St. Louis (1936) at the age of 111. She had a degree in medicine and is said to have given lessons in physical culture and etiquette to Queen Alexandra in England. During her medical practice, she delivered 2105 children in St. Louis. She had varied interests in life, including drama, music, philosophy, science, poetry, languages, politics, and close observation of human nature. She knew French, Spanish, Italian, and German. She traveled widely in the United States and visited and lived in ten countries of Europe. Dr. Davenport heartily believed that getting fun

and happiness out of life kept her active and prolonged her years; that the boredom of a routine existence and too much food were fatal to longevity.

The group studied was remarkable for its youthful enthusiasm, renewed physical strength, and willingness to strive for new adjustments in a not too conducive society for centenarians. It included several college and professional-school graduates, a lawyer, a state legislator, two social service workers, two school teachers, and a pharmacist, midwife, college professor, mortician, industrial chemist, college president. Noticeable among the majority were wide interests in world affairs, domestic policies of local and national governments, avocational pursuits, plans for the future, and insurance of social and economic welfare.

One-third of the total number were high-school graduates; and less than one-third had completed the grammar-school. Approximately one-fourth had received an education equivalent to the sixth grade. One woman had only a third-grade schooling and another had finished the requirements of the second grade. There were no illiterates among them.

Most of these women are natives of the United States and, consequently, received an American education. Of the 300, only sixty-four were born in countries other than the United States. Ten were born in England; eight in Germany; four in Austria and in Italy; three in Sweden and in the Netherland; two in each of the following countries: Canada, Ireland, France, Spain, Roumania, Finland, Czechoslovakia, the Ukraine, and Switzerland; and one in each of the following: Australia, Russia, Hungary, Bulgaria, Turkey, Iceland, Malta, Brazil, Belgium, Norway, Greece, Denmark, and the Argentine. With the exception of two, they had all, before attaining middle age, become naturalized citizens, happy in their patriotism.

## GENERAL STATUS OF THE GROUP

### *Religion Among Centenarians*

As a group, the centenarians showed an appreciable religious faith, yet none of them talked excessively or emotionally about it. Among the 300 women, there were 217 Protestants, 21 Catholics, 1 Greek Orthodox, 2 Theosophists, 2 Reformed Jews, and 57 with no specific church membership or preference.

Some philosophers claim that older people usually have a strong belief in religion and a profound trust in God and that this sense, or duty, of religious obligation is a motivating force in achieving longevity. Religion contributes that calm sense of security which is an important aspect of equitable living. It imposes a sense of security, a discipline, and a wholesome effect on the major emotions, such as hatred, jealousy, and anger.

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Many of the centenarians well remembered the tremendous courage, mental alertness, and faith in God that enabled Moses to lead the children of Israel across the Red Sea—drives that may have been the chief contributors to his long life of 120 years and the fact that when he died "his eye was not dim, nor his natural force abated." Moses was an excellent example of combination of faith, interest in world affairs, and continuous mental and physical work, contributing to long life. He was a Biblical organizer who apparently knew and practiced the rules of longevity.

#### *What Periodicals do Centenarians Read?*

What periodicals do centenarians enjoy and value most? The women were asked to fill out a blank in which they gave their personal reactions to various aspects of life and factors closely related to it. One of the questions was: "Name the magazine or periodicals, including the daily newspapers, which you read fairly regularly, and encircle the one you enjoy and value the most." It is true that enjoyment and value are not always synonymous terms, although the form of the question requires the centenarians to treat them as if they were equivalent. One reader remarked, "Enjoy most *Snappy Stories*, but value most *National Geographic*." More than 250 centenarians designated a daily newspaper as "enjoyed and valued most." *Life* is by far the most widely read magazine, by this group, outstripping its nearest rival, *Time*, by almost seventy votes. Other difference between successive magazines are relatively slight.

The fifteen most enjoyed and valued, listed in the order of their preference, were *Life*, *Time*, *Newsweek*, *Farm Journal*, *True Story*, *Collier's*, *Woman's Home Companion*, *Look*, *Ladies' Home Journal*, *Today's Woman*, *Modern Screen*, *Detective*, *Saturday Evening Post*, *Readers' Digest*, *National Geographic*.

#### *Employment Among Centenarians*

Many of the centenarians had full-time jobs and about thirty of them were part-time workers. Most of the women were employed at home, working on costume jewelry, making and painting toys, sewing dolls' clothing, and placing designs on leather goods. Three centenarians were employed in the Men's Toy Shop situated in New York City's lower East Side. In the shop, none was too old to be allowed to try her hand at sawing, planing, smoothing and fitting the light boards from which were made animals and hobby horses, doll-cradles and beds, and miniature garden tools, or to paint finished carpentry with gay tints and wide, splashy stripes. They were happy, for they possessed jobs at the period of life when most jobs are closed to women.

Ten other centenarians were partly employed as fruit-packers, and in checking stock in preparation for shipment. Five other women operated their own farms. Another, at the age of 101, still worked in a confectionary store; and still another was employed as a supervisor of



clerks for a chain-drug store. A few conducted their own business; one operated a small but complete variety store in Rhode Island; another maintained a dress-shop in Wisconsin; and still another was proprietor and manager of a general store in Iowa.

All of the employed centenarians were happy in their work. Able to support themselves in a meager way, they thus clung to their self-respect, holding themselves above the ignominy of institutional life.

### THE MENTAL HYGIENE OF SENESCENCE

Mental hygiene is the scientific formulation of common-sense principles into a definite set of goals, practices, and techniques, and the systematic and consistent application of these principles to life-situations.

The aged person experiences profound psychic and social difficulties and body change; and he tries to adjust to a social situation which must provide his support. Two of the centenarians were alcoholics, one was an epileptic, and two others were beginning to show symptoms of mental debility. Four of the women were seriously handicapped with visual and auditory disorders and were, consequently, emotionally maladjusted.

With very few exceptions, they all manifested a keen sense-of-humor, an attitude of tranquility, social poise, naturalness, and solid values; and some had definite and complicated romantic inclinations and matrimonial plans. They also demonstrated an unshakable self-confidence. "Confidence" meant that their life could be useful in some way, no matter how great the accumulation of years. Confidence stresses minimizing of worry, and of that feeling of hopelessness which can make one prematurely old.

Longevity is a resistance, an art, a confidence in the laws of nature and health. The observance of the centenarians and instruction in healthful living may suggest sounder health practices than those which are followed by the great majority of the people today. It is negative teaching that has been partly responsible for our unsatisfactory health habits. Children and adults have been told what not to do instead of what to do. Our physician should be used as an expert to show us both how to gain and how to keep vigorous health.

There is, in the group, a long-lived Vermonter of 108 who attributes her age to fresh mountain air, plenty of exercise, moderate mixed diet with plenty of fresh fruit, diversified interests, and an optimistic outlook on the world. She wants a handsome, attractive, thrifty husband. He must be ambitious, a hard-worker, a man who has accumulated some money and property. Furthermore, he must have a basic belief in the fundamental tenets of religion. He also must have a real sense-of-humor. This is her idea of a good and useful centenarian husband.

A Pennsylvania centenarian at the claimed age of 109 was planning to marry a man of 102 years of age. She had been married four

times and became a widow in each marriage. She stated that her prospective husband had a good constitution, had fair sight and hearing, and had the nerves and zest of a forty-year-old. He was applying for a Federal pension; upon the granting of the pension, they were to be married.

#### *A Centenarian Linguist*

A Minnesotan, at the age of 105, is still an ardent student of ancient and modern languages. She has a reading, speaking, and writing knowledge of Swedish, French, Italian, Spanish, and German, and is also versed in Greek and Latin. She attained these achievements largely through self-study and private tutoring, supplementing this training by extension courses from adult study-groups and universities. Not a college graduate, she was never interested in formal education. At ninety-one years of age, she matriculated in an adult study-group, taking courses in French drama and Italian literature. In addition to her profound interest in these ancient and modern languages, she also possesses a rich command of the English language and an encyclopedic knowledge of English and American literature.

#### *A Distinguished Shakespearean Scholar*

Another outstanding personality among the centenarians is a 102-year-old scholar from Boston, a former college-professor, lecturer, critic, and author. She has a firm, genteel mind, a luminous character, and is resourceful in matters pertaining to life and longevity. She had actually committed to memory eighteen of Shakespeare's plays and had been rehearsing and professionally reciting these plays for about sixty years. When she was asked to resign from the college staff, solely because of her advanced age, she still was a creative, dynamic interpreter of the drama, enjoying an enviable reputation as a lecturer. (The writer was fortunate, indeed privileged, to have been her student during her last few years of teaching before her compulsory retirement.)

Despite her years, this scholar still has an inexhaustable mental reservoir of drama, poetry and philosophy; and she can recall instantly hundreds of poetic lines and innumerable dramatic passages. She is also the author of several books and monographs on dramatic technique, the philosophy of expression, and theosophy.

#### *Romance at 113*

One of the most enthusiastic oldsters demonstrated an unmistakable interest in romance and matrimony. She is a native of Oklahoma, who, at the age of 113, was planning to marry her tenth husband. At the beginning of her 113th anniversary, she was mentally alert and physically capable of supporting twelve children, managing a sixty-acre farm. Up to five years ago, she took in washing for approximately fourteen families.

It appears that with the second century of life the human body



sometimes acquires new and significant powers of repair, and some energetic process of restoration. These phenomena are not fully explained. At the age of 100, this woman was cutting her third set of teeth, had a marked improvement in her vision and a keener hearing; and her hair, which had been snow-white for about forty years, was now streaked with lustrous black. She amazed the entire feminine inhabitants of her community by her many social and recreational activities. This centenarian attributes her physical prowess after 100 to simple living, proper dress, hard work and exercise, plain but wholesome diet, and drinking in moderation. Among other things, when the weather permits she walks about a mile each day.

### *Lady*

One of the centenarians told me she was 100 years old on her last birthday. We spent an hour together on an Indian-summer afternoon, with the leaves softly dropping from the trees in her spacious yard, and an amber haze resting dreamily on the distant hills.

"Lady" was made to be the title of such women as she: dignified, courteous, with manner touched with a gentle ceremony, so free they are from haste and so rounded out with leisure. "'Woman' is a term for service and business," stated this speaker, "for the work of the world and everyday use." *Lady*, as Hammerton has happily said, may be defined as "a woman in a high state of civilization." And this definition represents my great lady, in her gown of rich black silk, with yellow lace ruffles of price at her wrists, and her antique brooch at her throat.

In her early twenties she was a belle in that older New York, which had the Battery for its center of fashion and amusement. She dined, when a girl of seven or eight, with Henry Clay and danced the quadrille with the De Peysters and the Frelinghuysens, the Livingstones, and the Hoffmans, who then led the van in our Knickerbocker aristocracy.

The writer asked her about the hours for parties in those merry days of her youth; and she said that dancing invariably began at nine, and by midnight everything was over. Yet she acknowledged that the young people of that era did not surpass in health and vigor those whom she entertains when she gives her great granddaughters a house-party. When I ventured to inquire whether she had been fond of dancing, she laughed outright. "Fond of it, my dear!" she said. "I was devoted to it, and let me whisper a secret if you won't be shocked. I'm fond of it still, and I never hear a hand-organ playing in the street that my old, tired feet do not begin to move in time to the tune. The dance is in my system yet."

We had tea in her dainty cups, which had been held by Dolly Madison and which her friend's mother had handed to Lafayette; and when I congratulated her that none of the precious set was chipped

or broken, she observed that she always washed them herself, as her mother—also a centenarian—had done before her. "I never allow a maid to touch my fine china," she declared positively, "nor to wash my exquisite laces. These are things which a good housekeeper always prefers to attend to herself. This card table, at which Washington sat, is never polished by the housemaid. I rub it myself, or my daughter, an octogenarian, does it for me. You see, we have very little bric-a-brac about, and my drawing-room is not a curiosity shop, so that we have plenty of time to do our own dusting."

### CONCLUSION

#### *Not All Old Persons Really Feel Old, According to Centenarians*

One of the most interesting attributes of old age is that it is our visible link with the past. When we meet a person who began two or three generations behind us, we are clasping hands with the people who have made our history. The century-old woman was young when the nineteenth century was new: her mother and grandmother and great-mother, the latter of whom she may have seen and perhaps talked with, lived lives and had their triumphs in the eighteenth century. History grows very real and vivid when we talk with the very old.

The thing which younger people usually fail to understand and to properly appreciate is that the elderly person does not necessarily feel old. We are, after all, as old as we feel—no older—so that when health remains and spirits are buoyant, as in some old people, they do not realize the burden of the years. This strange ego of ours, living in the house which is our body and looking out of its windows, does not always age with the house. A woman often feels younger when her hair is gray; and I know certain sweet old ladies who are much younger in heart and mind than their juniors—less cynical, less worldly wise, and less suspicious of evil.

#### *Cling to the Daily Tasks as Long as Possible*

To paraphrase the centenarians, love does its mistaken best to efface them, giving them the easy chair and the sheltered corner, and saving them from all exertion, insisting that they are to be waited upon and work taken out of their hands. Maturity has no right to let itself be laid upon the shelf too soon. There is one glory of the rosebud and another glory of the rose; one beauty of the growing grain and another beauty of the ripened sheaf.

A woman must not be in any haste to withdraw from the activities of life, let her bold keep her place at the helm as long as she can. A matron should not lay aside her usual housekeeping tasks too early. Several summers ago, in the Catskills, it gave me great pleasure to watch a sweet-faced centenarian taking charge of her dairy as she had done for many years—the milk, the cream, the golden butter in her hands, as they had been all her life. Many women grow old too early in the

sense of becoming incapacitated, simply for the reason that she terminates her work, and yields to others the responsibilities which would give life zest and make it full of enjoyment.

In fine, the vast majority of the women-centenarians seem to have shown that longevity is not necessarily due to an exclusive physique, but that prolongation of life may be attained through the regulation of proper habits, a moderate mixed diet, living vigorously, productively, equitably, and with appreciation of the beauty surrounding us. Beauty, that is, must tempt and stimulate us to live for well-chosen purposes. It must do more than nourish our bodies; it must stimulate us to think, feel, enjoy, and put forth our strength; it must be full of spiritual values as well as material support. Another requisite for longevity, according to this group of centenarians, is security. A world that is subject to revolution, banditry, criminality, is not fit for security to thrive in. Security is one of the essentials of free society.

They also said that the world expects women to be affectionate mothers and real home-makers, to seek a career if they have the urge to contribute, to be humble, religious, faithful and steadfast, making our lives beautiful and worthy of imitation.

No one is ever too old to learn. Most humans stop learning much too early. Average adults show many of the symptoms of mental stagnation long before senescence, in spite of their mental achievements. Mental power is the most precious and distinguished possession of centenarians and should be developed to the fullest extent.

There seems to have been a concurrence of viewpoint as to the requisites of an ideal man. According to these centenarians, he should be a tender lover, companionable and understanding, should know the proper habits of healthful living, should possess an alert mind and a strong, firm will. He must be emotionally sane, must have a sound concept of religious belief, must be prudent, and should know the worth of laughter.

The personality traits, personal accomplishments, philosophies, maxims, interests, desires, wisdoms, and expectations of the centenarians studied have guided the lives of these women and, consequently, give a practical and successful guide to the problem of postponing mental, emotional, and physical decline in old age.

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## THE CASE OF SLANSKY OF CZECHOSLOVAKIA

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The purpose of this paper is to present the details of the trial of Rudolf Slansky, former Deputy Premier and Secretary General of the Central Committee of the Communist Party of Czechoslovakia. An attempt will be made to relate the behavior of Slansky and his co-defendants as observed during the trial to the behavior of experimental subjects in a psychological laboratory.

In November, 1951, Slansky and twelve other high ranking Party officials were arrested. One year later, in November, 1952, the defendants were given a public trial, the conduct of which was unprecedented in Czechoslovakian history. All charges, including acts which the defendants could not possibly have committed, were responded to by prepared statements which substantiated the accusations. The trial proceeded as smoothly as a well prepared theatre drama; the actors had learned their lines well. All of the accused were declared guilty; three were sentenced to life imprisonment but Slansky and the nine others were executed.

Rudolf Slansky, second in the Party hierarchy only to Klement Gottwald, former Chairman of the Communist Party and President of the Republic, had been an active member of the Party since 1921, and had used his full power against the democratic government of Czechoslovakia in 1948. Yet he was accused of and admitted to having followed the same behavioral path as Eduard Benes, leader of the exiled Czechoslovakian Government during the war, a profound democrat and lifelong opponent of Communism.

The complete confessions of high ranking Party officials to such devastating accusations aroused the suspicion of Communist Party members and the general public. The Czechoslovakian Ministry of Justice deemed it necessary to publish an account of the entire episode in a book entitled *The Trial of the Leadership of the Anti-State Conspiratory Center Headed by Rudolph Slansky* (Process, 1953). Unless otherwise indicated, all material pertaining to the trial has been derived from this original source.

The procurator opened the trial with the accusation that "... as Trotskyite-Titoist Zionist, bourgeois nationalist traitors and enemies of Czechoslovak people, peoples' democratic system and socialism, the defendants created in the service of the American imperialists an anti-state conspiratory center, which received directives from the enemy Western espionage; they subverted the people's democratic systems, thwarted the building of socialism, damaged the national economy, carried on espionage activities, weakened the unity of the Czechoslovak people and defense abilities of the Republic in order to separate it from the firm alliance and friendship with the Soviet Union. The defendants wanted to liquidate the peoples' democratic order in Czechoslovakia, to renew capitalism and bring the Republic again into the camp of imperialism, and to destroy its independence . . ." (Process, p. 9).

When asked whether he was guilty, Slansky replied,

"I fully admit my guilt and I want to state honestly and truthfully everything that I did and what my offences were. I offended heavily the interests of the Czechoslovak people. I am responsible today before all the Czechoslovak people and the democratic peoples of the whole world for my offences. In my statements I am not going to save myself or my accomplices. First of all, I am not going to protect myself.

As one of the most outstanding functionaries of the Communist Party I misused the great confidence the Party placed in me and the Czechoslovak people entrusted to me; I have threatened through my enemy activity the great possibilities people fought for in 1945.

First of all, I want to admit that I was an enemy inside the Communist Party and of the People's democratic system; I organized an anti-state Center and headed it for a number of years. This center into which I had concentrated a great many capitalistic and subversive elements, many of whom at different times became espionage agents of the French, the English and foremost of the Americans, carried on enemy activity in the interest and services of the Anglo-American imperialists. It was activity which would have led to the liquidation of the People's democratic system and the restoration of capitalism. I carried on hostile activity inside the Communist Party, in economy, foreign service, security and the army. We have worked in the Party and in the State apparatus to bring about a return and a liquidation of the People's democratic system.

I admit that I contacted the representative of the Anglo-American imperialists and their intelligence service, Koni Zilliacus, who interfered in the internal affairs of the Czechoslovak Re-

public. I admit that during the time of the Slovak national uprising, while I was delegated to Slovakia by the Moscow Party leadership, I carried on hostile activity; I defended the interests of the Anglo-American imperialists and the Benes' London Government and betrayed the interests of the Czechoslovak people" (Process, p. 48).

The Procurator's task was not to provide evidence of the defendants' guilt. That was done by the defendants themselves, and in any event was predetermined. Rather it was his duty to provide the public with an explanation of how Slansky, the Secretary General of the Party, could have betrayed the Party and moreover could have escaped detection for so many years. Slansky provided the required explanation: his bourgeois heritage had prevented him from being a true communist, and since his deception was so masterly, the Communist leaders could not be blamed for trusting him. He testified,

"I joined the worker's movement as a man of bourgeois origin. My father used to be a wealthy village businessman and I grew up in the environment of a business family which influenced my personal qualities and my character. I joined the Communist Party in the year 1921. I brought with me different small city ideas (bourgeois ideas) of which I could not rid myself. It led to the fact that I did not become a real Communist, that I did not act as a Communist and that I did not fulfill honorably duties which followed my membership in the Party . . . I was not revealed sooner because I masked myself, I covered up my enemy activity, I acted as if I were a follower of the Bolshevik line, although in reality I did not follow the Bolshevik position. Thus it happened that via my Trotskyite and opportunistic ideas I went so far as to become a bourgeois agent, an enemy of the Communist Party and later on also of the People's democratic system" (Process, p. 48).

Slansky declared that his active fight against the Party and the Czechoslovak people began in 1944 when the Moscow Party leadership (the Communist Party of Czechoslovakia in exile) had ordered him to assist in the organization of a partisan movement in Czechoslovakia. In doing so, he had co-operated with western agents. However, since at that time there had been agreement between the western allies, the USSR and the democratic Czechoslovakian government in exile to co-ordinate the fight against Nazi Germany, Slansky had merely performed his duty. No mention was made of the fact that the Party line had subsequently changed.

The defendant testified that he had erroneously created the illusion that at the conclusion of the Czechoslovak-Soviet Pact, Benes was a sincere friend of the Soviet Union while in reality he was an imperialist agent, with whom Slansky co-operated. He was accused of



going to the USSR as a bourgeois agent and as an enemy of the Party. That the Communist Party itself had sent Slansky to the USSR was not mentioned.

As Secretary General of the Communist Party, Slansky claimed that he put enemy elements including Western espionage agents, collaborators with the Germans, enemies of the people, Jewish or Czech bourgeois nationalists, conspirators and leading men in industry in the pre-war period into important positions within the Party and State apparatus. Although aware of their previous activities, he had protected them and enhanced their power. He admitted that he had supported the Zionist "bourgeois-nationalistic movement" and supported Israel although it is a bourgeois state. He allowed Jewish people to export property illegally causing great material damage to Czechoslovakia. Critics of Zionism were persecuted and excluded from the Party. Slansky's trial may have been partially motivated by anti-Zionism on the part of the Communist Party but was not, however, an anti-semitic act.

Slansky admitted violations of Party policies. "Careerist" elements were permitted to join the Party, decisions were made without informing the Chairman of the Party, Klement Gottwald, who was thus isolated; the method of persuasion was replaced by the method of command. The international section of the Party was permitted to interfere with the Ministry of Foreign affairs and with the Army. He confessed that he and his associates had plotted economic sabotage. Goals for the Two and Five Year Plans had been set purposely low. Heavy industry was neglected to the detriment of all the peoples' Democracies, while there was over production of light industry goods which were exported to capitalist countries. Soviet experience in economic planning was ignored and the development of economic relations with the USSR and other socialist countries was hindered; the Czechoslovak economy was bound to "the capitalistic West"; economic nationalism was fostered.

The most obvious distortion of facts was Slansky's admission that both he and Benes had the same aim, the liquidation of the peoples' democratic system. "We were actually Benes' allies," he said. The Anti-State Conspiratorial Center was to grow in power by obtaining control of important positions within the Party and the government. The restoration of capitalism, he testified, was to have been gradual in order to deceive the people. "We would have taken the same steps as Tito, namely, we would have given up the idea of building socialism." He added that he had wanted to be a "Czechoslovak Tito."

The decision to liquidate the powerful Secretary-General was made in Moscow, not in Prague. The major purpose of the trial was to instill fear in Communist Party leaders and members in Czechoslovakia and other satellite countries, to curtail national aspirations and



to produce willing and dependable tools of the Stalin regime. The fear of Titoism or the political and economic independence of Communist governed countries contributed to the purge. Nationalism, always rather high in Central-Eastern Europe, was enhanced even among Party members and leaders by the Nazi occupation. The Czechoslovak Communist Party leadership had presented themselves as highly nationalistic in the attempt to obtain a large electoral vote prior to seizing power. When the Party eliminated opposition it was unable to transform nationalism into internationalism instantaneously. Moscow, aware of the need to curb nationalistic trends, used Slansky and his associates as convenient scapegoats to frighten other Communist leaders into the desired conformity.

Khrushchev (1956), in his special report to 20th Congress of the Communist Party of the Soviet Union provided dramatic descriptions of resistance breaking techniques used in the USSR during the Stalin era. Slansky and his co-defendants were imprisoned for one year prior to the trial. That they endured cruel interrogation procedures is suggested by the testimony of one defendant who said that another defendant during interrogation had refused to testify and had attempted suicide several times. When informed, Slansky is purported to have said, "If she wants to commit suicide, let her do it." Although this incident was presented as evidence of Slansky's desire to be rid of a dangerous witness, it also suggests methods of interrogation unheard of in the democratic Republic of Czechoslovakia. Slansky, one of the chief architects of destruction of democracy in Czechoslovakia, destroyed the legal system under which he and his colleagues had enjoyed freedom and thereby facilitated his own execution.

The behavior of Slansky and his accomplices at the trial, and indeed that of numerous other persons who have fully confessed crimes which they could not have committed, requires examination. Confessions during interrogation prior to the trial are understandable if one considered the severe physical punishment, deprivation of food and water, and threats, which in all probability were used. But unless promises of release or at least extreme leniency were made in return for confessions, the confessions during the trial, which was attended by the public, are less understandable. *A priori*, one would expect that desperate men, innocent of many of the accused crimes, would have used truth at the trial in a last attempt to save themselves. If it is assumed that the confessions were not based on promised release or leniency, how can behavior theorists explain the lack of self-defense during the trial?

Most systematic explanations of behavior make use of drive reduction hypothesis or the law of effect which, in essence, states that responses which are followed by tension reduction are readily acquired and persist in the learner's behavioral repertory. Experimental evidence indicates that on the basis of contiguity, fear or anxiety reac-

tions can become attached to a multitude of cues (e.g. Sheffield, 1948) and that these reactions can, in turn, serve as cues for the initiation of responses previously associated with anxiety reduction (May, 1948). Controlled research and data from clinical cases indicate that many mal-adaptive responses are initially learned and become fixated on the basis of anxiety reduction (e.g. Dollard and Miller, 1950).

The majority of experiments from which the law of effect is derived have used rats as subjects and have employed such acts as eating or avoiding shock as tension reducers. However, Cameron (1951) has used hypotheses based on such experimental evidence to make significant contributions to the understanding of mal-adaptive behavior such as anxiety produced gastrointestinal changes, compulsions, and delusions. The following analysis which represents, in part, an extension of his approach, is based on the assumption that animal studies may provide at least an experimental analogue for the learning experiences of political prisoners such as Slansky.

The basic hypothesis is that fear reduction is rewarding and hence reinforces the learning of new reactions. An experiment by Mowrer (1950) is representative. White rats were placed in an alley, the entire floor of the alley being an electric grill. When current was applied to the grill, the animals could escape the shock by running to a small safety compartment. After relatively few trials, the rats ran directly to the safety box as soon as they were placed in the alley and thus completely avoided the electric shock. The procedure was then altered so that in order to get to the safety box the rat had to run over a portion of charged grill. Shock could be avoided entirely by remaining in the uncharged part of the alley. However, instead of staying in the uncharged area, the animals continued, for hundreds of trials, to run at once across the electrified grill and into the safety compartment.

The initial phase of Mowrer's experiment provides an example of escape and avoidance instrumental conditioning and probably exemplifies the same learning process as that involved in forcing the prisoners, during interrogation, to admit guilt. Most probably admittance of guilt, like running to the safety compartment, was instrumental in escaping from punishment, and thus reducing anxiety. It would seem that during the initial trials, the rats learned to fear the entire experimental situation, while the prisoners learned to fear the interrogation procedure. Fear reducing responses were learned and reinforced through fear reduction. Subsequently, the situation for the rats changed; running to safety brought shock, and shock reinforced the rats' fear of the apparatus. Thus, according to Mowrer, since the fear cues which had originally been associated with running were intensified, the animal repeated the act which had been reinforced by fear-reduction—that of running to the safety compartment. For the prisoners, it is likely that the approach of their impending trial changed the

situation for them in a manner analogous to Mowrer's changed experimental procedure for the rats. Ample experimental evidence indicates that the tendency to avoid a feared object is stronger the nearer the subject is to it (Miller, 1944). No doubt, as the trial approached, the prisoners became increasingly afraid of the consequences of their confessions. But just as the rats' increased fear of the apparatus enhanced the tendency of the rats to repeat the response which led to fear-reduction, the prisoners, with a mounting fear of the final consequences, had an enhanced tendency to repeat the only response which had resulted in fear-reduction—confession. Thus, it would seem that admission of guilt was reinforced by tension-reduction, and, at the same time, anxiety was intensified rather than alleviated, so that the behavior tended to be self-perpetuating. Mowrer (1950) refers to such self-defeating yet apparently self-perpetuated behavior as the neurotic paradox while other theorists (e.g. Horney, 1945) speak of the vicious circle of anxiety motivated reactions.

Although the seemingly maladaptive behavior of Slansky and his accomplices during their trial can be explained at least partially on the basis of hypotheses derived from experimental laboratories, it is admitted that the role of anxiety in human behavior is infinitely more complex than the fear of electric shock in the laboratory animals. As Neal Miller (1951) says,

"... theoretical and experimental work has a long way to go before it bridges completely the gap between the fundamental biological drives and the wonderfully complex web of socially learned motives that determine adult human behavior."

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## ACHIEVEMENT MOTIVATION: AN ADLERIAN APPROACH

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Motivation, because it is such an integral part of human behavior, has in recent years engaged the attention of an increasing number of psychologists. Perhaps the most impressive researchers of this problem today are Atkinson (1958), Cattell (1957), Maslow (1954), McClelland and his co-workers (1953, 1955). However, long before our present preoccupation with this intricate problem, Alfred Adler in his writings and teachings in Individual Psychology, directly and indirectly, reported significant data on achievement motivation.

Anyone who is familiar with the life of Adler and his writings, either from a popular point of view as presented by Bottome (1957) or from an academic point of view as given by the Ansbachers (1956), is well aware that Adler's own life was a vivid example of high achievement motivation.

Therefore, in order to cast new light upon the problem, it might be well to view the findings of some of the present-day research from an Adlerian approach, remembering that Maslow has pointed out from his study of Individual Psychology and his personal acquaintance with Adler, "I have felt through these years that the Adlerian insights were not sufficiently appreciated by American psychologists, psychoanalysts, and clinicians" (1954, p.x.).

### POINTS OF CONSIDERATION

*First point.* We read in the life of Adler how mathematics was a difficult subject for him and that it required of all the subjects the most independence on the part of an individual. His father had been advised to take him out of school and put him in a vocational school where he would learn a trade. One day, much to Alfred's surprise he completed a problem which even had stumped his teacher. This success changed his whole attitude towards mathematics. He began to enjoy it and used every means at his disposal to increase his mathematical ability. The result is that he became one of the best mathematicians in the school (Ansbachers, 1956, p. 401).

Instances of experiences similar to this example from Adler's life led McClelland to define a motive as "the reintegration by a cue of a change in an affective situation" (1953, p. 28). In other words and as this applied to education, an individual would be more willing to approach a learning task when it was felt to be associated with success, consequently giving rise to high achievement motivation.

Adler was also concerned with the motives of human behavior as well as the use to which a person's abilities were put. "The direction and the directed utilization of instincts and drives, as well as impressions from the environment and education, are the artistic work of the child and cannot be understood in the sense of a psychology of possession (Besitzpsychologie) but only of a psychology of use (Gebrauchpsychologie)" (Ansbachers, 1956, p. 205). In fact this is one emphasis of his school of psychology, "Individual Psychology is the psychology of use and emphasizes the creative appropriation and exploitation of all these influences" (Ansbachers, 1956, p. 205). Reduced to its simplest terms in regard to the solution of life's problems Adler says "There is only one reason for an individual to side-step to the useless side: the fear of a defeat on the useful side" (Ansbachers, 1956, p. 157).

Thus an individual may be a high achiever depending on the use he makes of his abilities and potentialities. These in turn are shaped by his attitude towards life and may be influenced by his experiences.

*Second point.* In his work, *The Achievement Motive*, McClelland discusses the importance of understanding an individual in terms of his goal, "the goal is the functional significance of the act" (1953, p. 39). In relation to the responses of the subjects he defined a motive generally as a "goal-oriented free choice. . ." (McClelland, 1953, p. 39). Combining these two definitions, he clarified a motive further as "a strong affective association, characterized by an anticipatory goal reaction and based on past association of certain cues with pleasure or pain" (McClelland, 1955, p. 226). As he was studying achievement motivation he was interested in the goal(s) having to do with achievement.

Individual Psychology also emphasizes the need to understand the individual in terms of his goal(s), "If we know the goal of a person, we can undertake to explain and to understand what the psychological phenomena want to tell us, why they were created, what a person has made of his innate material, why he has made it just so and not differently, how his character traits, his feelings and emotions, his logic, his morals, and his aesthetics must be constituted in order that he may arrive at his goal" (Ansbachers, 1956, p. 196).

In helping us to understand further human behavior as influenced by a goal, Adler writes, "The dynamic value of mental, emotional, and attitudinal movements consists of their direction toward, or determination by, a goal which has for the individual the meaning of securing for him what he regards as his position in life. Only in this way can we understand these goal-directed movements: as the individual's effort to secure for himself what he interprets, or misinterprets, as success, or as his way of overcoming a minus-situation in order to attain a plus-situation" (Ansbachers, 1956, p. 181). In fact the goal can influence not only a person's behavior but also his attitude towards life, "The goal influences the philosophy of life, the pace and the schema of life of an individual and guides his expressive movements" (Ansbachers, 1956, p. 219).

In other words it is only by knowing what the goal of an individual is that we are able to understand his behavior and how it is purposive in serving his life style. From information obtained from exit interviews with "withdrawal" students plus an analysis of underachievers at Fordham College, the relation of motivation and goals or lack of both were apparent. Adler spoke of this as follows: "In a child's choice of occupation we can observe his whole style of life. He is showing us the main direction of his striving and what he values most in life" (Ansbachers, 1956, p. 431).

Thus we must understand an individual in terms of his goal(s) and in the case of students this must be in regard to his occupational choice as this will influence his behavior and attitude towards his academic pursuits.

*Third point.* In keeping with the first and second points, McClelland proceeds to give his concept of a goal as related to achievement motivation. "By achievement goal is meant success in competition with a standard of excellence," (1953, p. 110) which he gives as an example "the boy wants to do a good job" (1953, p. 39). He gives other examples in Chapter IV. In describing high achievers he says they look upon achievement as a "challenge not as a threat" (1953, p. 271). Also, high achievers were more concerned with "overcoming obstacles and eventual success rather than avoiding failure" (1953, p. 271). Again, high achievers did not "show real evidence of striving unless the performance is defined as one which will be considered a personal accomplishment if done well" (1953, p. 271).

In speaking about the achievements of children Adler states: "They can keep up their courage only if they have a purpose in view for their efforts and if the achievement of this purpose is more important to them than the obstacles which stand in the way" (Ansbachers, 1956, p. 112). The importance of their interest direction is next considered by Adler "It is a question of where their interest and attention is directed. If they are striving towards an object external to themselves, they will quite naturally train and equip themselves to achieve it. Difficulties will represent no more than positions which are to be conquered on their way to success" (Ansbachers, 1956, p. 112).

Adler also emphasized the importance of success, "educational influences are likely to be accepted only when they seem to hold a promise of success for the individual's style of life" (Ansbachers, 1956, p. 212). He further believed that the individual should make his own choice of a vocational goal: "We must let the child place his own value on an occupation since we ourselves have no means of saying which occupation is higher and which is lower. If he really does his work and occupies himself in contribution to others, he is on the same level of usefulness as anyone else" (Ansbachers, 1956, p. 431).

*Fourth point.* According to the study of M.R. Winterbottom (1953) and confirmed by D. C. McClelland and his associates (1953, 1955), it



was found that "early training in independence and mastery contributes to the development of strong achievement motivation" (Atkinson, 1958, p. 478) and "achievement motivation in boys is associated with stress on independence training by their mothers" (McClelland, 1953, p. 304). Furthermore mothers who said they expected their sons to do well on their own at an early age tended to have sons with higher achievement scores. That is, mothers who expected their sons to be self-reliant early in life—to make their own friends, to find their own way around their part of town, to do well in competitive sports and the like—tended to have sons with strong achievement motives. Their sons, in other words, developed away from them (Winterbottom, 1953).

McClelland after confirming Winterbottom's findings stated his hypothesis thusly "achievement motivation develops out of parents' concern that children 'stand on their own feet' rather early in life and learn to do things for themselves" (1955, p. 412).

For Adler the role of the mother was a most important one in the development of the child "The mother represents the greatest experience of love and fellowship which the child will ever have. Her task is to relate the growing child to herself psychologically, as he was formerly related to her physically. But she must also nourish the child's growing consciousness with true and normal conceptions of society, of work, and of love. In this way she gradually transforms the child's love for her and dependence upon her into a benevolent, confident, and responsible attitude towards society and the whole environment" (Ansbachers, 1956, p. 372).

Adler warns mothers with the admonition: "If a mother considers only her tie with her children, she will be unable to avoid pampering and spoiling them. She will make it hard for them to develop independence and the ability to cooperate with others" (Ansbachers, 1956, p. 373). Instead the child should develop to become a useful citizen and human being: "The person who performs useful work lives in the midst of the developing human society and helps to advance it" (Ansbachers, 1956, p. 132).

Independence training being an emphasis of Individual Psychology, it is not surprising to find Adler giving advice to even the discouraged for whom he had high hopes: "Valuable as it is to establish friendly relations with discouraged children through a sympathetic attitude, this is not enough. The friendly relation must be used to stimulate them to continue their improvement. This can be done by making them more independent, that is, by bringing them through various devices to the point where they necessarily acquire faith in their own mental and physical powers. They simply must be convinced that what they have not yet achieved can readily be attained by industry, perseverance, practice, and courage. One must put tasks in their way which they can accomplish, and from the accomplishment of which they can gain faith in themselves" (Ansbachers, 1956, p. 400). Adler favored doing this



early in the child's life: "The style of life, in our experience, is developed in earliest childhood" (Ansbachers, 1956, p. 186).

*Fifth point.* Another significant finding on achievement motivation in regard to independence training from an early age is that college students saw themselves as "independent from all types of pressures toward conformity—parental or otherwise" (McClelland, 1953, p. 288). Adler believed so much in the uniqueness of each individual that he called his system of teachings, Individual Psychology. In regard to this point he tells us: "The demands of life compel the child to make his responses in a unified manner, and this unified manner of answering situations not only constitutes the child's character but also individualizes each of his acts and makes them distinct from the similar acts of other children" (Ansbachers, 1956, p. 180).

In fact another principle of Individual Psychology is to learn about individual differences: "It has been imputed to us that we assume and strive for the sameness of men. This is a myth. Quite on the contrary, we attempt to examine the nuances, the uniqueness of the goal, the uniqueness of the opinion of a man of himself and the tasks of life. The task of Individual Psychology is to comprehend the individual variant" (Ansbachers, 1956, p. 180). This is succinctly put by Adler: "The creative striving of the child takes place in an environment which is individually comprehended and which posits individual differences" (Ansbachers, 1956, p. 184).

*Sixth point.* Another finding of Winterbottom (1953) and McClelland (1953) is: "Mothers who use physical rewards for fulfillment of achievement demands have sons whose average  $n$  Achievement score is twice that of the sons of mothers who use more attenuated means of affective arousal" (McClelland, 1953, p. 306). Two more tenets of Individual Psychology which support the above findings are optimism and encouragement of people: "Right education is the method of developing the individual, with all his inherited abilities and disabilities. By courage and training, disabilities may be so compensated that they even become great abilities" (Ansbachers, 1956, p. 400). Again, Adler supported this research: "According to Individual Psychology, 'Everybody can accomplish everything,' and it is a sign of an inferiority complex when a boy or girl despairs of following this maxim and feels unable to accomplish his goal on the useful side of life" (Ansbachers, 1956, p. 400). Naturally Adler was aware that this could be done within limits (Ansbachers, 1956, p. 400ff). However, Adler gives emphasis to his teachings: "The aim of Individual Psychology treatment is always to increase an individual's courage to meet the problems of life" (Ansbachers, 1956, p. 362).

In regard to the results of encouragement with children Adler shares his experience: "They see the road towards the fulfillment of their ambitions clear before them. They are full of new ideas and new projects. Their creative life is intensified, and their interest in all the

aspects of our human process becomes more vivid and eager. These are the children who have kept their courage, and to whom independence means, not difficulty and the risk of defeat, but wider opportunity to make achievements and contributions" (Ansbachers, 1956, p. 441).

In keeping with his view on encouragement Adler did not believe in punishment: "Punishment is regarded by the child as confirmation of his feeling that he does not belong in school. He will want to avoid school, and look for means of escape, not means of meeting the difficulty" (Ansbachers, 1956, p. 401). No hypothesis in this area was checked by McClelland due to a reluctance on the part of the mothers to make such an admission (1953, p. 306).

*Seventh point.* Any approach to achievement motivation would be incomplete without heeding the warning of Maslow who was influenced by Individual Psychology when he gave the following admonition that "... the individual is an integrated, organized whole . . . In motivation theory this proposition means . . . the whole individual is motivated rather than just a part of him" (1954, p. 63). McClelland and his associates used the reverse approach in studying "one motive" (the achievement one) and its relation to the whole personality (1953, p. vi).

Adler was also very clear and to the point on this subject: "The solution of the greatest problem would always be up to the never-resting creative mind. This remains pressed into the path of the child's style of life, as does everything that has a name in the various schools, such as instincts, impulses, feeling, thinking, acting, attitude to pleasure and displeasure, and finally self-love and social interest. The style of life commands all forms of expression; the whole commands the parts" (Ansbachers, 1956, p. 175).

#### FURTHER RESEARCH

This last point (Seventh) is all the more true when the multiplicity of variables that can influence human behavior and its movement(s) to action is considered. Individual Psychology does not stop here but offers numerous other avenues of research for the investigation of the problem of achievement motivation which it may be well for other investigators to consider.

Just a few of these would be the relevancy of inferiority feelings or complex to achievement motivation. We already know from the writings of Alfred Adler that people of outstanding achievements had backgrounds of inferiorities (1917, 1926). In recent times, there is the popular work of Ray (1957), in which she cites numerous examples of high achievers as compensating positively for either feelings of inferiority or an inferiority complex (real or imagined). It would be interesting to pursue these findings in arriving at a better understanding of achievement motivation of college students as well as with industrial workers.

Another area worthy of further research would be the ordinal effects

of the family position and its relation to achievement motivation. For instance, the youngest may easily outdo his siblings depending upon his reaction(s) to the other members of the family constellation as a form of achieving what he feels is his rightful place.

A third area of research suggested from Individual Psychology is the results of compensation and over-compensation as they would relate to achievement motivation. It is an established principle in Individual Psychology that an individual may compensate either positively or negatively for his problem(s) or imagined one(s). This is surely an area worthy of further study and investigation.

A final area which is readily indicated from the principles of Individual Psychology is the effects of social interest or *gemeinschaftsgefühl* and its relation to achievement motivation. Certainly this would be interesting to study further, especially when some scientists, professors and numerous others from a wide range of disciplines have been high achievers and still are such for purely social-feeling or interest reasons—the benefit and welfare of mankind. There is already a study of the results of a lack of social interest, made by Adler's daughter Alexandra (1941), showing just the opposite results.

### SUMMARY AND CONCLUSIONS

In view of the striking similarities between the findings of some present-day researchers of achievement motivation and the Individual Psychology of Alfred Adler which we have seen in this paper as well as the areas which have been suggested for further study, the direction of future research has been indicated and cooperative research efforts are recommended.

We may conclude with the words of McClelland concerning achievement motivation "the problems uncovered in the course of this research have been so numerous and complex that we feel their solution will require the cooperative effort of many scientists" (1953, p. 1). How similar are the words of Adler who emphasized cooperation as a focal point of Individual Psychology: "The whole of human life proceeds along this great line of action—from below to above, from minus to plus, from defeat to victory. The only individuals who can really meet and master the problems of life, however, are those who show in their striving a tendency to enrich all others, who go ahead in such a way that others benefit also. All human judgments of value and success are founded, in the end, upon cooperation; this is the great shared commonplace of the human race" (Ansbachers, 1956, p. 255).

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## PERSPECTIVES IN PSYCHOLOGY

### XV. HISTORY OF SCIENCE AS SCIENTIFIC METHOD

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Our current intellectual era is clearly characterized by a phrenetic pursuit of the history of science. Symptomatic are the founding of journals, university institutes and departments concerned with the history of science and the history of medicine, as well as the great accumulation of literature (books, journal articles, bibliographies) on historical subjects. In most cases, too, this growing interest is strongly yoked to a concern with philosophical problems of science.

Why should this be the case? One outstanding factor certainly is the general realization that there is a continuity in the establishment, modification and conservation of scientific institutions. Awareness of scientific history, it is believed, may help scientists to orient themselves with respect to the origin of doctrines and theories. As a consequence of this orientation they may either dissociate themselves from certain ways of thinking or be reinforced in their assumptions. Probably the most important value of scientific history is the opportunity it offers for an evaluation of the preconceptions which lie at the basis of individual and institutional scientific practices and theories. An outstanding illustration here for the psychologist is that he can trace out the sources of such universally accepted presuppositions as those that associate the nervous system more uniquely than any other biological system with psychological events. Perhaps an even more striking illustration is that the history of psychology yields information concerning the origin of the various phenomenological doctrines which are so detrimental to the advancement of psychology as a science.

Because postulation is an indispensable feature of scientific work the history of science plays an extremely large role as an investigative method. The history of science is not simply an educational device to associate the domains of the Arts and the Sciences. Nor is it a tool for making science subservient to conventional philosophy as many writers seem to hold. Stress must be placed upon the positive value that scientific history provides for understanding the basic assumptions that guide scientists in attacking their problems and which lead them to the unique type of conclusions they draw from the variables that confront them.

The methodological value of scientific history is excellently illustrated by constructing a case study from the writings of an eminent physicist who has recently devoted himself to the problems of scientific

history and its import for scientific thinking (Schrödinger, 1954). This scientist has studied Greek science which he correctly characterizes as naturalistic, that is, it is based upon the assumption that scientists investigate things and events which they discover in their natural surroundings, and concludes that the modern scientist must avoid this way of thinking. What Schrödinger contends is that the modern scientist has made the important discovery that things and events are really constructs of the "mind" and are projected into a space that is itself a projection of "mind." This scientist joins many other theoretical physicists (Bohr, Heisenberg, Eddington, etc.) in assuming that the scientist is not just a spectator but also by virtue of his mental character a participant in the objects and energies known.

An historical analysis of the origin and evolution of scientific postulates clearly reveals that Schrödinger adopts fallacious preconceptions about psychological events and consequently draws improper conclusions concerning nature and our knowledge thereof. If this is true may we not conclude that the history of psychology is not only a valuable method for psychology but at the same time is also important for understanding the foundations of physics and cognate sciences?

What is correct and what is incorrect about Schrödinger's interpretation of the Greek scientific scene? Obviously the Greeks were scientifically primitive and tied to things and events of everyday life. Their predominantly visual and tactual approaches to nature are completely unsuitable for our complex world of energy, radiation, and subatomic interrelations. But why should the ability to analyze and control events unknown to the Greeks, and to speculate about them warrant the belief that the behavior of the scientist creates the original things he studies?

Do we not have here a definite confounding of events and constructs, a confusion of descriptions and things described? True it is, of course, that scientists are doomed to work a great deal with constructions and that often they compose false propositions, even such as represent nothing. It is true too, that events are recondite and require investigative subterfuges for their identification and investigation. But neither the innocent errors nor the culpable myths of scientists warrant the belief that there is a transcendent ego which creates scientific things and events out of its own impalpable substance.

Why should a modern physicist accept a dichotomy of mind and matter, or emphasize mind and make it the creator of matter? The history of psychology makes clear the general cultural and specific theological origin of such soul constructions. But for the thorough assimilation of the Patristic and Medieval ways of thinking it might be possible for the physicist to see that mind is only a name for man's subtle interactions with things. The history of science shows plainly the evolution of interactions with things from the earliest contacts with

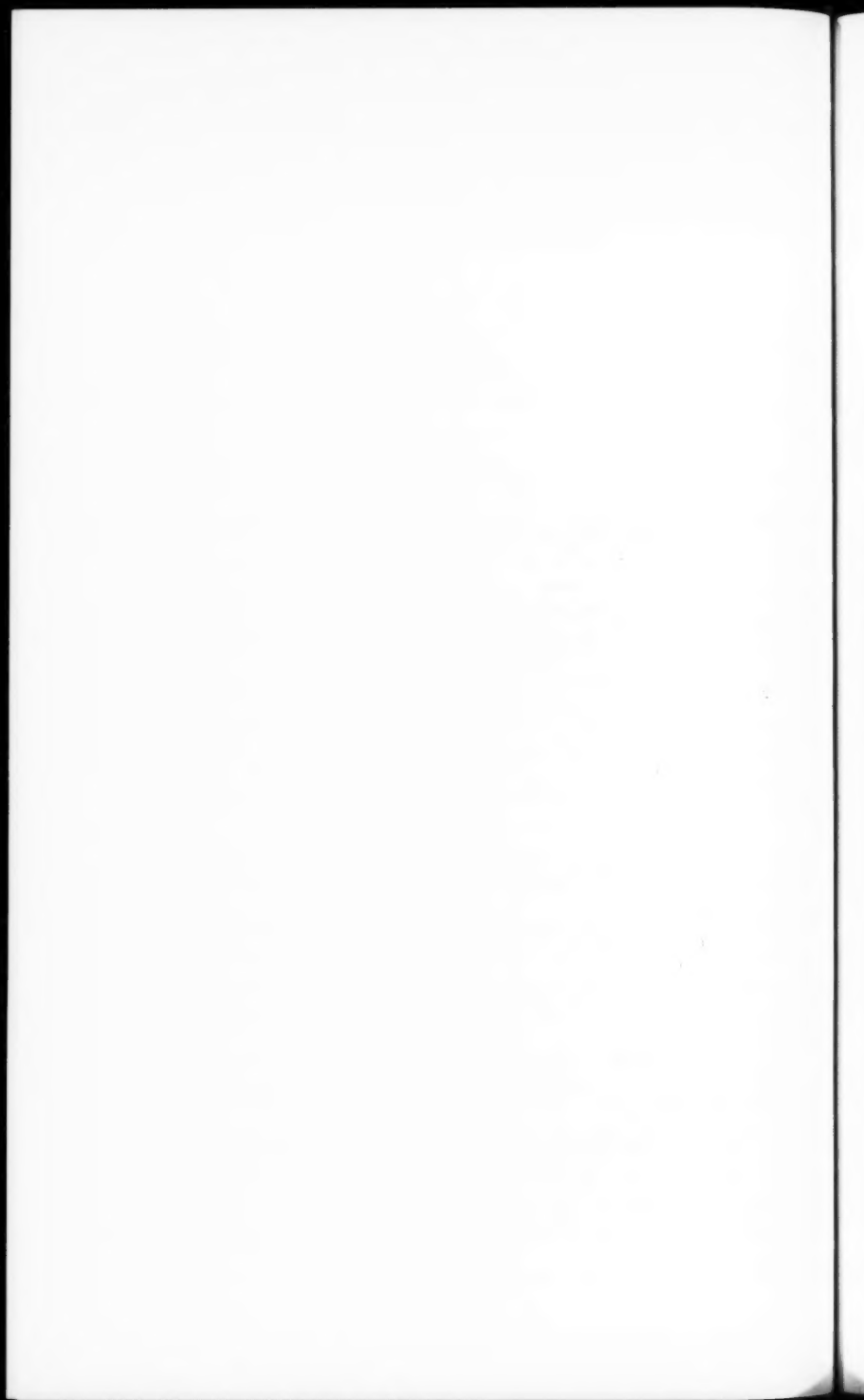
simple and superficial traits to the most elaborate analyses of objects and relations. Freedom from conventional postulates facilitates the observation of the development of science from the contacts with comparatively simple things in the days even of Galileo and Newton to the discovery of the more complex and subtle things and events since the days of Becquerel, Röntgen, Curie, etc., etc.

In the specifically psychological domain history records the verbal creation by the Church Fathers of the "mind" and its powers by obviously misinterpreting the human organism and its actions. The employment of history as a genuine method of science instead of a scientific support for institutional ways of thinking would provide all theoretical scientists with more naturalistic and more rational ideas concerning scientific data and constructions about them.

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## AN ANALYSIS OF QUESTIONS ON SEX

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An analysis of questions that persons ask about sex may give some insight into the various sexual problems people have and the relative importance of these problems in their lives. Comparing the differences and similarities between male and female questions may give added insight into male and female sexuality.

The present study is an analysis of the letters from 7,608 persons (5,602 or 74 per cent from males and 2,006 or 26 per cent from females) containing questions to the Letters to the Editor Department of a current, popular magazine on sex. These data have been held in as strict confidence by the Institute as the sexual histories contributed to us over the past twenty-one years.<sup>1</sup> The letters cover a ten-year period from 1946 to 1955 and constitute all of the letters received during those years. The letters were written by a wide variety of persons; some were obviously from poorly educated people, while others came from college graduates, doctors, and ministers. The great majority appeared to be from middle social level groups or from slightly below middle level groups. For the most part the letters seemed overwhelmingly sincere and the writers appeared to be honestly seeking answers to questions that were of great concern to them. There were a few "crank" letters, some from evident psychotics, and one was a practical joke sent by the shipmates of a sailor in his name. However, all of these combined did not constitute more than 1 or 2 per cent of the total. A great many of the letters were very frank in disclosing the sexual life of the letter-writer. In the great majority of cases the questions concerned a particular problem of the subject. Occasionally the person was writing in for someone else and occasionally he was asking for information only because of curiosity, but these were the exceptions.

The question arises as to whether the readers of this magazine may constitute a very select portion of the total population, and that therefore it is not possible to generalize from this sample to any broader population. It is doubtful whether any sound answer can be given to this objection. There are also other possible selective factors. Perhaps only a nontypical portion of the readers themselves wrote letters to the editor. The sample is well spread over the country, but begs the question as to the selective factor among letter-writers within a given section. It is the

<sup>1</sup> As a further precautionary measure, the publishers of *Sexology* took a number of safeguards so that no letter would fall into unauthorized hands.

judgment of the author that these selective factors may very well operate to a limited extent, but that the directions in which they operate are unknown.

Some of the letter-writers (6 per cent) indicated that they had sent in questions previously. Not all of these would have fallen within the ten-year period covered by this report, however. On the other hand, there were undoubtedly others who had written in more than once without so indicating in their letters. Inasmuch as the analysis of the content of the letters will be made in terms of the number of questions asked rather than in terms of the number of persons asking questions, the problem of repeaters is not of great importance. Certainly it is safe to conclude that less than 10 per cent of the letters represent multiple letters from the same individuals.

The 7,608 persons sent in 11,183 questions. The males asked 8,241 questions, the females 2,942. This calculates to 1.5 questions per letter for both males and females.

The ages of only half of the letter-writers are known. Of those known, only 5 per cent came from persons under 20 years of age. Less than 2 per cent came from persons over 70 years of age. Nearly half (43 per cent) are in the 20-29 age bracket, with females, especially, being more heavily represented in the younger years. There was four times as high a proportion of males as females 60-69 years of age asking questions. A comparison of the ages of the letter-writers with the U. S. Census for 1950 shows a much higher proportion of letter-writers in the 20-29 age bracket, and a considerably smaller proportion in the teenage group and from age 40 on.

About 5 per cent of the letters were not identified as to state of origin. In comparison to the distribution of the population according to the 1950 census, the two outstanding points of difference are in New England, where 6 per cent of the population resided, but from where only 3 per cent of the letters were received, and in the Pacific states, where 10 per cent of the population resided in 1950, but from where 18 per cent of the letters were received. (From California alone 13 per cent of the letters were received, but California accounts for only 7 per cent of the total United States population.) The similarity between the percentage of population in most regions and the percentage of letters received from these regions is, however, striking.

In addition to the United States sample, 905 letters (12 per cent) came from foreign countries. Forty-six different countries were represented. The large number from Central and South America (64 per cent) were undoubtedly stimulated by the Spanish edition of this magazine.

The marital status of the letter-writers could be determined in over 60 per cent of the cases. Single persons constituted 33 per cent of the sample, married persons 61 per cent, and separated, widowed, and divorced constituted 6 per cent of the sample. A much greater percentage

of the females than of the males who wrote letters were married. A cultural pattern of reticence on the part of unmarried females in discussing matters of sex may be one of the factors involved. It is also possible that a smaller percentage of unmarried females have sexual problems or at least sexual questions on which they want advice.

Table 1 summarizes the questions which were asked.

TABLE 1  
SUMMARY OF QUESTIONS ASKED

Questions on:	Males		Females		Total	
	N	%	N	%	N	%
Sexual practices	2027	24.4	521	17.7	2548	22.5
Sexual arousal	1822	22.3	526	17.9	2348	21.1
Male anatomy and physiology	1648	20.1	85	2.9	1733	15.7
Female anatomy and physiology	375	4.5	608	20.7	983	8.8
Reproduction	719	8.6	656	22.3	1375	12.3
Miscellaneous	1650	20.1	546	18.5	2196	19.6
Total	8241	100.0	2942	100.0	11183	100.0

### *Sexual Practices*

These questions covered the following items:

Anal intercourse	Masturbation (by male)
Coital techniques	Mouth-genital contacts (heterosexual)
Coitus	Nudism
Coitus (frequency)	Pedophilia (by male)
Coitus in menstruation	Petting (premarital)
Coitus in pregnancy	Pornography
Coitus (nonmarital)	Prostitution
Dildoes	Sado-Masochism
Dreams (by female)	Transsexualism (of female)
Dreams (by male)	Transsexualism (of male)
Exhibitionism (by male)	Transvestism (of female)
Fetishism (of male)	Transvestism (of male)
Homosexuality (of female)	Urination (sexual)
Homosexuality (of male)	Voyeurism (by male)
Incest	Zooerastia (by female)
Masturbation (by female)	Zooerastia (by male)

Masturbation was the subject of 3.4 per cent of the questions asked by males and 2.0 per cent of the questions asked by females. Usually these questions took the form of queries concerning the harmfulness of masturbation. Because of the greater acceptance of masturbation now, as compared to a generation ago (Kinsey et al., 1948), the frequency of questions about this type of activity is undoubtedly lower than would have been found twenty-five years ago. As would be expected, females more often asked about female masturbation and males about male masturbation.

Nocturnal sex dreams were rarely the subject of either male or female questions. However, four times the percentage of males asked about sex dreams than did females.

Petting (premarital) was the subject matter in a small percentage of female and male letters. The questions usually asked about the desirability of such behavior before marriage.

All questions about coitus constituted 4.8 per cent of the male queries and 5.6 per cent of the female queries. In the study by Brown (1948), males asked about intercourse in 6.1 per cent of their questions. However, this study concerned a group of soldiers in Europe whose average age was less than that in the present sample, and for most of them marital intercourse was not available. In the present study males were more often concerned with questions about coital techniques, whereas females in a higher percentage of the cases asked about the advisability of nonmarital intercourse.

Males and females asked about homosexuality in the opposite sex with about equal frequency (0.6 and 0.7 per cent), but males asked about male homosexuality in 4.6 per cent of the cases and females asked about female homosexuality in only 1.5 per cent of the cases. This difference between male and female in concern over homosexuality in their own sex is not surprising in view of the somewhat similar difference in incidence and frequency of male and female homosexuality (Kinsey et al., 1953). In the Brown study (1948) 4.7 per cent of the subjects asked about homosexuality.

In the males, 0.4 per cent of the questions were about human contact with animals (zoerastia) whereas only 0.2 per cent of the female questions were concerned with this type of behavior. This difference between male and female was also reflected in both incidence and frequency, as shown in *Sexual Behavior in the Human Female* (Kinsey et al., 1953). The females were usually incredulous that such an act was possible, whereas the males were more often asking for more specific information concerning incidence and the possibility of pregnancy.

Only 0.2 per cent of male and female questions were asked about prostitution. A generation ago the chances are very good that this percentage would have been considerably higher, for the frequency of contact with prostitutes was about twice as high then as now (Kinsey et al., 1948).

One of the most frequent questions asked concerned mouth-genital contacts (3.9 per cent for the males and 2.4 per cent for females). In most cases the inquiry was aimed at whether it was normal or of harm to the individual. In the interviewing of 18,000 persons by the Institute for Sex Research, concern over mouth-genital contact has also been one of the most frequent matters brought up by them.

Anal intercourse was the subject matter of 0.5 per cent of the male

questions but nearly twice as many (0.9 per cent) of the female questions. However, in many cases the females stated that their husbands were desirous of this type of activity and that they were not. Almost never was the reverse true. Hence, although a higher percentage of females wrote in about this question, it would seem that a higher percentage of males are interested in having this type of activity.

A surprisingly high percentage of the questions asked about male pedophilia (adult male sexual contact with children) was asked by females (1.1 per cent *vs.* only 0.2 per cent for males). The female questions on the subject reflect the current concern over "child molestation," "sexual morons," and "sex fiends" so commonly played up in the press.

Questions concerning sado-masochism were asked by 0.7 per cent of the males and 0.5 per cent of the females. Our own research indicates that 22 per cent of the males and 12 per cent of the females are aroused by sado-masochistic stories (Kinsey et al., 1953). Rarely, however, does sado-masochistic fantasy develop into any extensive overt sado-masochistic activity. Hence the lower percentage of questions asked on this topic, almost all of which were concerned with overt activity, does not reflect the much higher percentage of sado-masochistic fantasy which occurs without overt expression.

Almost no questions were asked about female fetishism. A few female questions (0.2 per cent) were about male fetishism. Four times as many males made queries (0.8 per cent) concerning this.

A differentiation has been made concerning questions about transvestism (the desire to wear clothing of the opposite sex) and transsexualism (the desire to be physically changed to the opposite sex) (Benjamin, 1953). Transsexualists are transvestites in the sense that they would wear clothing of the opposite sex after a genital operation, but their main focus of attention is a change in genital anatomy rather than cross-dressing. Transvestites are usually not transsexualists; their focus of attention is in cross-dressing rather than in genital changes. The public has been particularly intrigued with transsexualism since the widespread publicity concerning Christine Jorgensen and others. As mentioned in *Sexual Behavior in the Human Female* (Kinsey et al., 1953) there are more males than females who are involved with these phenomena. In the present sample, 2.2 per cent of the male questions and 0.7 per cent of the female questions were about transvestism or transsexualism. No females or males asked about female transvestism, but a fair number of female questions (0.4 per cent) were about female transsexualism. These letters came in bunches, following articles on this subject in the magazine.

At first it was surprising to the author to find that three times the percentage of female inquiries were about pornography than were male questions (0.6 per cent *vs.* 0.2 per cent). This does not appear to agree with the Institute's earlier findings in regard to differences in sexual response to erotic stories (Kinsey et al., 1953). However, although

sometimes the inquiry was concerned with how and where to purchase pornography for erotic reasons, in the female letters it was more often concerned with asking why males were interested in pornography. Thus, even though the percentage of the inquiries was higher for the females, this does not necessarily indicate that they are more interested in pornography as a source of erotic arousal.

In general, 24.4 per cent of the male questions and 17.7 per cent of the female questions concerned the various sexual practices just discussed. It is of interest to note that these percentages are as close together as they are. On *a priori* grounds it might be thought that males are more concerned with sexual action than are females and would have a larger percentage of their questions revolving about this aspect of sexuality. Actually a higher percentage of female letters were concerned with their objections to the male's participation in these sexual acts than were male letters objecting to the female's participation.

### *Sexual Arousal*

These questions covered the following items:

Abstinence and sublimation	Male arousal, general
Anaphrodisiac	Male not aroused
Aphrodisiac	Male too aroused
Fantasy	Male impotence, ejaculatory
Female arousal, general	Male impotence, erectile
Female not aroused	Male impotence, general
Female too aroused	Premature ejaculation
Female orgasm	

The question concerning female arousal constituted 2.9 per cent of the male inquiries and 7.2 per cent of the female inquiries. With both males and females the questions usually turned around the lack of female arousal, which is not surprising in view of the less frequent sexual arousal of the females in comparison to the males (Kinsey et al., 1953).

Male arousal was the subject matter in 1.6 per cent of the male questions and 1.7 per cent of the female questions. With both sexes the main emphasis in the questions was on the male lack of arousal. It appears that with both males and females there is more concern either by the self or partner over failure to perform or be aroused, then concern over too high a desire or response by the self or partner. Hence, if two partners have a different desire for intercourse (one wanting a low frequency and the other a high frequency), the question concerning this problem is usually stated in terms of how the low frequency can be raised rather than how the high frequency can be lowered.

The problem of most concern to men was that of impotence, as indicated by the high percentage (9.1 per cent) of questions they asked on this subject. Females, on the other hand, were concerned with male impotence in only 1.3 per cent of the questions. The great concern of the males was in erectile impotence. It is interesting in this connection that clinicians recognize ejaculatory impotence as a minor problem in relation to it.



In 6.0 per cent of the questions the problem of premature ejaculation was raised by the male. As we have pointed out in *Sexual Behavior in the Human Male* (Kinsey et al., 1948), premature ejaculation is not the same problem as impotence even though it is called impotence by many clinicians. Articles which had appeared in the magazine about an ointment to be used to slow response brought in many of the questions concerning premature ejaculation.

Female orgasm was asked about in 6.3 per cent of the female queries and in 1.4 per cent of the male queries, and usually concerned the female's inability to have orgasm (Kinsey et al., 1953). This question stands second in frequency for the females (Table 2), which indicates the importance women attach to this factor in their sexual lives.

### *Male Anatomy and Physiology*

These questions covered the following items:

Adolescence (male)	Genitalia too large
Ageing (sexual)	Genitalia too small
Breasts (male)	Hirsutism (male)
Castration	Pain during ejaculation
Circumcision	Priapism
General	Prostate
Genital discharge	Semen
Genitalia, size and shape	Spermatorrhea
	Testes

As would be expected, males are considerably more interested in this subject than are females. A fifth of the questions asked by males were concerned with this subject, whereas only 2.9 per cent of the female questions were so concerned. In 7.9 per cent of the inquiries, the size or shape of the penis was the major concern of the males, and in the greatest percentage of the cases it was concern over the small size of the penis which prompted the person to write a letter. Because size of penis is such a relatively minor factor in satisfactory coitus it is believed that this concern over small size is a reflection of the emphasis in our culture on large genital size. Similarly, we will see the same type of cultural factor operating in the next section where it is shown that females are concerned with small breast size.

Only 0.6 per cent of the questions from males concerned male hirsutism (bodily hair, not necessarily in the genital region), yet twice as many female questions (1.4 per cent) were concerned with female hirsutism. This points up the different attitudes in our culture concerning this phenomenon in males and females.

Only in the matter of priapism was there a larger number of female, than male, questions (0.3 per cent vs. 0.2 per cent). At this point the author has no ready explanation for this discrepancy.

### *Female Anatomy and Physiology*

These questions covered the following items:

Adolescence	General
Breasts	Hirsutism
Breasts too large	Menstruation
Breasts too small	Vagina too large
Clitoris	Vagina too small
Douche	Vaginal discharge
Ejaculation (female)	Virginity

In the preceding section we found males more concerned with male anatomy and physiology than were the females. Here we find females more concerned with female anatomy and physiology than were the males. However, the male questions were slightly more concerned with female anatomy and physiology (4.5 per cent) than were the female questions with male anatomy and physiology (2.9 per cent). Male and female letter-writers were about equally concerned with their own anatomy and physiology (20.1 per cent *vs.* 20.7 per cent).

Questions such as small size of penis, small size of breasts, hirsutism, etc., appear to be of much less concern to the opposite sex than to the sex "suffering" with these problems.

An almost equal number of male as female questions was concerned with female virginity, but percentage-wise only 0.8 per cent of the male questions concerned virginity compared to 2.2 per cent of the female questions. Most of the questions on virginity from both males and females came from Latin American countries where there appears to be considerably more concern over an unbroken hymen at the time of marriage.

### *Reproduction*

These questions covered the following items:

Contraception	Menopause (female)
Fertility and sterility	Menopause (male)
Hysterectomy	Vasectomy
Induced abortion	

As might be expected, females are more concerned with this subject than are males, since they are more immediately involved. The highest percentage of all questions asked by females in the entire list is about fertility and sterility (14.4 per cent). This ranked only sixth for the males (see Table 2). An equal percentage of men and women (3.0) sought answers to questions about contraception. Interestingly enough a higher proportion of male questions (0.6 per cent) than female questions (0.2 per cent) dealt with induced abortions. Usually these queries revolved around how to secure an abortion.

*Miscellaneous*

These questions covered the following items:

Clinical help	Miscellaneous
Discourse	Nonsexual
Heredity	Personality problems
Hormones	Reference literature
Marriage and love	Sex education
Marital adjustment	Venereal disease

Since the advent of antibiotics, questions concerning venereal diseases are not nearly as numerous as they probably would have been prior to World War II. Thus only 1.9 per cent of the male questions and 1.2 per cent of the female questions were on this subject.

Over twice as many male questions (2.8 per cent) as female questions (1.3 per cent) were concerned with hormones. Men asked more often about the use of male hormones (1.8 per cent) to increase sexual drive or potency; occasionally there were queries relating to effecting changes in sexual patterns.

Questions on problems of marital adjustment (not sexual adjustment) were asked more frequently by females than males (0.5 per cent vs. 1.9 per cent), but questions concerning love and marriage (usually taking the form of "Should I marry?" or "Am I really in love?") were asked as often by one sex as the other.

It is amazing that not more than 0.2 per cent of the questions were asked about problems of sex education. No ready explanation is available to account for this seeming disinterest. Males asked more questions concerning personality problems (0.8 per cent) than did females (0.5 per cent).

When questions were asked concerning where the letter-writers could turn for clinical help, regardless of the type of help needed, or to what books they could turn for aid, the question was recorded under "clinical help" or "reference literature" as well as under the particular subject heading of the questions. Females appear to be slightly more prone to seek additional help from clinicians and books than are the males (7.3 per cent vs. 6.3 per cent).

Letters in which no question was asked were classified under "discourse." Sometimes these letters were harangues against or praise for the magazine; more often they were expositions on a particular subject of interest to the letter-writer.

About the same percentage of nonsexual questions was asked by males and females. These ranged in their subject matter from cancer and other diseases to antivivisectionism, euthanasia, and religion.

Table 1 shows that males were more concerned about various sexual practices (24 per cent) than were females (18 per cent). Also queries

with regard to sexual arousal were more frequently asked by males (22 per cent) than by females (18 per cent). However, questions about fertility and reproduction were asked a much higher percentage of the time by females (22 per cent) than by males (9 per cent). Men were more concerned with male sexual anatomy and physiology (20 per cent of the questions asked *vs.* only 3 per cent of the female questions asked) whereas women were more concerned with questions of female sexual anatomy and physiology (21 per cent of the questions asked *vs.* 5 per cent of the male questions asked about these subjects).

In Table 2 the eight questions asked most frequently by males and females are shown.

TABLE 2  
RANK ORDER OF QUESTIONS ASKED

Question	Males		Question	Females	
	N	%		N	%
1. Male impotence, erectile	686	8.4	1. Fertility and sterility	421	14.4
2. Premature ejaculation	491	6.0	2. Female orgasm	184	6.3
3. Genitalia too small	410	5.0	3. Clinical help	148	5.0
4. Clinical help	405	4.9	4. Female not aroused	146	5.0
5. Male homosexuality	381	4.6	5. Breasts too small	120	4.0
6. Fertility and sterility	364	4.4	6. Hysterectomy	99	3.4
7. Heterosexual mouth-genital contacts	318	3.9	7. Vaginal discharge	81	2.8
8. Male masturbation	256	3.1	8. Contraception	74	2.5

Of the eight questions, only two are common to both groups, requests for clinical help from sources other than the medical editor of the magazine stood third on the list for females and fourth for males. Questions on fertility and sterility were first on the female list, but were sixth on the male list. For the females this question was asked over twice as often as the next most frequent one. Inadequate functioning of the males in intercourse account for their most frequently asked question (erectile impotence), and also for their next most frequently asked question (premature ejaculation). It is of interest to note that males often felt their penises were too small although females seldom mentioned this, whereas females felt their breasts were too small but males seldom complained of this.

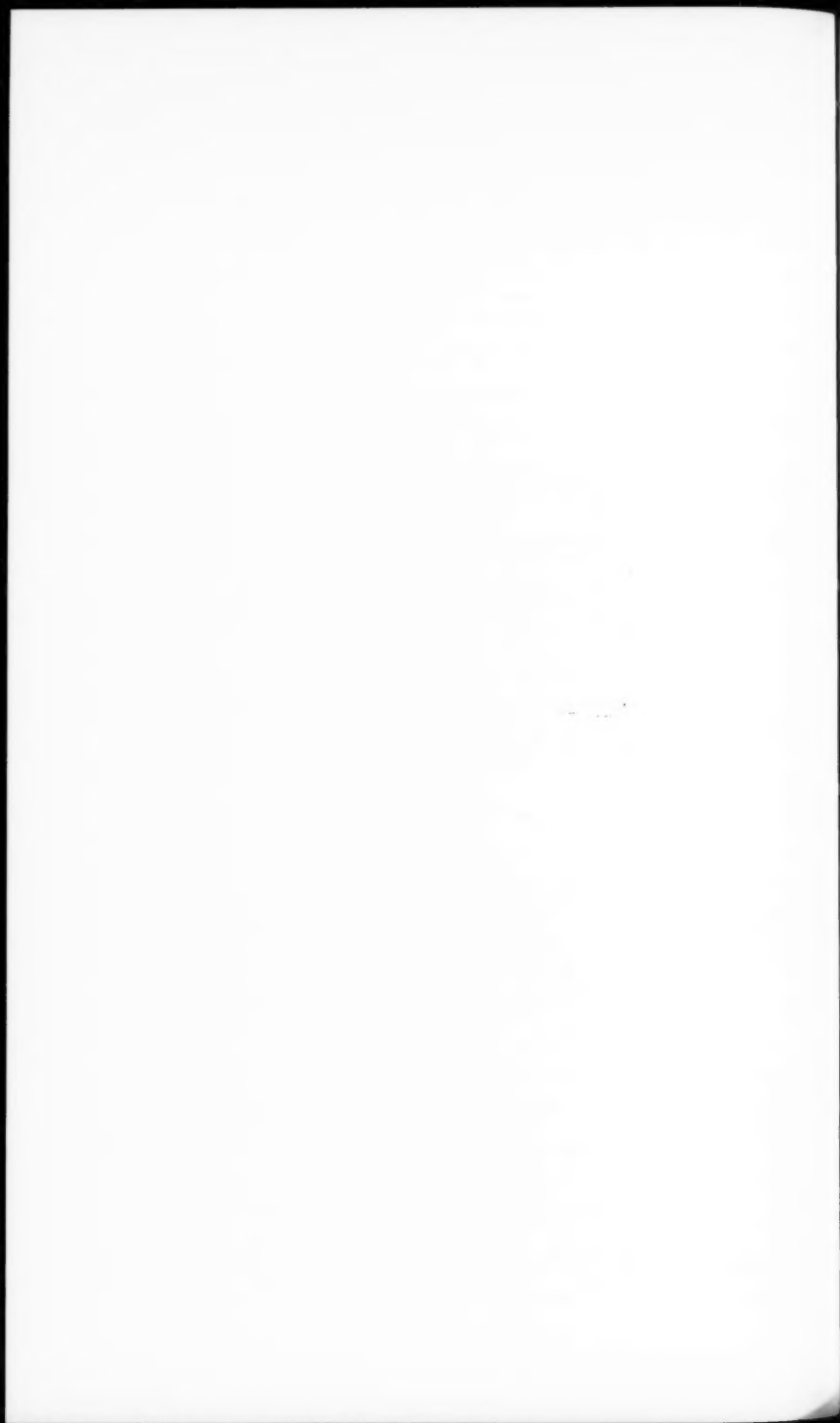
## SUMMARY

Letters from 7,608 persons, 74 per cent of them males and 26 per cent of them females, sent to the "Letters to the Editor" of a current, popular magazine on sex were analyzed as to the types and frequencies of questions asked.

As one might anticipate, the frequencies of the various questions asked by males and females fall in line with their differences in overt sexual activity. Males more often than females asked about masturbation, dreams, homosexuality, and zoosteria. Males were more concerned about impotence, premature ejaculation, and the small size of male genitalia, whereas females were concerned about failure to become pregnant, failure to be aroused and have orgasm, and small size of female breasts. In general, males were more frequently concerned with their own sexual behavior and genital adequacy; females with reproduction, their own responsiveness, and their anatomy.

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## ADDITIONAL OBSERVATIONS ON SCORING THE ACCURACY OF WRITTEN RECALL<sup>1</sup>

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In a previous article (King, 1960) a method was described for objectively evaluating various methods for scoring the accuracy of written recalls. The method consisted of using scaled scores as criteria. In addition, factor analytic treatment of the intercorrelations among the scoring procedures yielded two factors which were identified as the number of content words and the total number of words. In Experiment I of the above cited article two different stories were used and each story was given to two groups of Ss, the story being read once to one group and twice to the other.

### *Procedure*

In the present study, the recalls of six additional groups, of fifteen females each, were utilized as basic data. Groups G, H, and I recalled the story *Who Shall Go* after three, four, and five readings respectively while groups J, K, and L recalled Bartlett's *War of the Ghosts* after three, four, and five readings respectively. These were the same stimulus stories that were utilized in the previous experiment.

The written recalls of the six groups were then scored for accuracy of recall by the following seven different methods: Idea group, cloze procedure, number of sentences, content words, total number of words, identical words, and criterion scores. The details of these scoring procedures have been given in a previous paper (King, 1960).

## RESULTS AND DISCUSSION

All of the twenty-one inter-correlations among the seven scoring systems were calculated for each of the six groups of recalls. The results are presented in Tables 1 through 6. The *rr* term associated with each matrix is the reliability of the scaled criterion scores calculated according to a method presented elsewhere (King, 1960).

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TABLE 1  
CORRELATION MATRIX FOR THE RECALLS OF GROUP G

	2	3	4	5	6	7	1
2. Idea Group	-	.780	.524	.766	.945	.729	.910
3. Cloze Procedure		-	.573	.767	.562	.792	.760
4. Number of Sentences			-	.461	.806	.761	.732
5. Content Words				-	.719	.795	.653
6. Total Number of Words					-	.982	.809
7. Identical Words						-	.857
1. Criterion (Scaled Scores) $r_r = .982$							-

TABLE 2  
CORRELATION MATRIX FOR THE RECALLS OF GROUP H

	2	3	4	5	6	7	1
2	-	.778	.305	.821	.637	.667	.792
3		-	.007	.863	.539	.570	.586
4			-	-.027	.074	.053	.025
5				-	.620	.828	.674
6					-	.955	.631
7						-	.708
1							-

$r_r = .945$

TABLE 3  
CORRELATION MATRIX FOR THE RECALLS OF GROUP I

	2	3	4	5	6	7	1
2	-	.816	.867	.829	.546	.176	.848
3		-	.642	.857	.486	.585	.675
4			-	.675	.303	.356	.695
5				-	.593	.686	.788
6					-	.970	.715
7						-	.759
1							-

$r_r = .973$

TABLE 4  
CORRELATION MATRIX FOR THE RECALLS OF GROUP J

	2	3	4	5	6	7	1
2	-	.652	.773	.835	.619	.595	.753
3		-	.261	.658	.035	.146	.478
4			-	.658	.581	.533	.522
5				-	.450	.446	.689
6					-	.989	.681
7						-	.651
1							-

$r_r = .867$

TABLE 5  
CORRELATION MATRIX FOR THE RECALLS OF GROUP K

	2	3	4	5	6	7	1
2	-	.950	.755	.920	.879	.927	.922
3		-	.681	.917	.788	.822	.843
4			-	.663	.688	.688	.762
5				-	.909	.932	.888
6					-	.994	.943
7						-	.938
1							-

$r = .976$

TABLE 6  
CORRELATION MATRIX FOR THE RECALLS OF GROUP L

	2	3	4	5	6	7	1
2	-	.876	.700	.939	.650	.531	.886
3		-	.523	.852	.444	.382	.884
4			-	.719	.712	.509	.695
5				-	.713	.566	.883
6					-	.788	.496
7						-	.224
1							-

$r = .973$

TABLE 7  
FACTOR MATRICES

Groups													
	G		H		I		J		K		L		
Tests	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	F1	F2	
2.	.675	.616	.889	.405	.975	.226	.863	.448	.804	.569	.785	.556	
3.	.846	.313	.788	.341	.788	.405	.727	.021	.861	.436	.764	.412	
4.	.352	.724	.214	-.014	.811	.258	.610	.450	.583	.506	.471	.641	
5.	.704	.439	.735	.511	.757	.524	.861	.322	.704	.639	.744	.619	
6.	.500	.839	.294	.890	.170	.942	.141	.983	.462	.887	.286	.829	
7.	.526	.834	.357	.914	.093	.999	.169	.957	.524	.848	.212	.709	
1.	.659	.641	.511	.619	.590	.702	.530	.642	.601	.751	.722	.381	

The six correlation matrices were subjected to factor analysis. To make the resultant factor matrix comparable to those obtained in the previous study (King, 1960), the same solution was utilized. This consisted of solution by the centroid method with variables six, seven, and one reflected for the first factor residuals and after the second factor loadings were obtained, the solution was rotated through 45 degrees and the second factor reflected. Table 7 presents the factor matrices derived from the previously presented correlational matrices.

In Experiment I of a previous study (King, 1960) it was hypothesized that as the degree of learning increased, the reliability of the scaled scores would decrease. This would seem to be almost necessarily so, if one considers the end-point of learning where the Ss recall the story with no errors. In this case, the judges would have to rank the recalls in a random order which would produce zero reliability. As is clear from the reliabilities presented in the correlation matrices, this did not occur within the degrees of training given. Assuming that with an increase in the number of times the story is read there is some increase in learning (more evidence on this point will be presented in a following section), apparently judges are able consistently to discriminate among recalls utilizing smaller or less obvious cues than they used with a smaller degree of learning.

Observation of Table 7 seems to indicate two conclusions: First, F2 seems to be definitely associated with length or total number of words. The total number of words or length factor had the highest loading on F2 in four of the six matrices. In the recalls of groups H and I where length did not have the highest loading on F2, the highest loading was on the total number of identical words, which is almost always highly correlated with length. These conclusions about the nature of F2 are in complete agreement with the results of the previous study (King, 1960).

The nature of F1, however, appears to be much more complex than previously considered. Prior research suggested that test five, content words, was most representative of F2. In the present results, content words did not have the highest loading on F1 in any of the matrices. Variable three, cloze procedure, had the highest loading on F1 in the recalls of groups G and K, with the recalls of the remaining groups having the highest loadings on variable two, idea group.

Apparently then, within the limits of the learning material used, the degree of learning obtained, and the scoring procedures utilized, there are two basic factors that are important in scoring the accuracy of written recall. One factor, F2, can be clearly and easily identified as the total number of words written on length. The other factor, F1, is not so clear in its delineation. The results obtained in the present experiment suggest both cloze procedure and idea group as representative or typical of F1. On the otherhand, in an earlier study (King, 1960), using a smaller number of repetitions of the same original learning material, content words emerged with the highest loading on F1. It would seem possible that, unlike F2, F1 is not fixed or constant in nature but that it changes in composition as a result of some complex interplay between the nature of the learning material and the degree of learning of that material.

In an attempt to gain some idea about the degree of learning reached under the various numbers of repetitions of the learning material, a comparison of the obtained means and standard deviations of the various accuracy measures for both stories will be presented. Tables 8 and

9 present the means and standard deviations of the various groups from both the present and previous (King, 1960) research. As the mean accuracy score for the criterion always remains the same this information will not be given. Of course, any interpretation of the following Tables must be done with great caution as each of the replications represent different groups of fifteen subjects. Using two rather than ten groups would have greatly strengthened this part of the analysis but at the expense of the generality of correlation and factor analytic results.

For clarification it should be noted that in Table 8, the recalls of groups A, B (from previous research), G, H, and I correspond to one, two, three, four, and five number of repetitions respectively; while in Table 9, the recalls of groups C, D (from previous research), J, K, and L correspond to one, two, three, four, and five repetitions respectively.

Observation of the standard deviations in the two Tables helps clarify the problem of why the reliability coefficients did not continue to drop as the number of repetitions of the learning material was increased. It will be noted that in the recalls of either story, for any of the accuracy measures, there was no consistent decrease of variability as the number of repetitions increased. A decrease in variability would seem logically to be necessary for a decrease in reliability.

If the various accuracy scores, for the recalls of both stories, are plotted with the number of repetitions as the independent variable (not shown), a number of consistencies seem to be present. First, most of the curves look like the upper segment of the learning curve, i.e., most of the curves seem to be near their maximum, with very little of the lower more sharply accelerated portion of the curve present. This probably reflects the fact that in the learning of connected meaningful material the subjects bring into the learning situation a large number of previously learned verbal habits which are directly applicable in the present task (vocabulary is the most obvious example). In order to produce the lower portion of the learning curve it would be necessary to utilize verbal stimuli that force the subjects to use fewer previously learned verbal habits. Perhaps stories constructed by a procedure similar to the Miller and Selfridge (1950) technique would exhibit a larger portion of the learning curve.

It might also be hypothesized that the learning curves resulting from complete learning of extended connected material would be similar in shape to the learning curves for complex skills, i.e., the curves would show one or more plateaus. As stated, the present curves appear to be near their maximum but the recalls are nowhere near a word for word reproduction of the stimulus story. As the two stories are not so long that they couldn't be memorized by the college student, further intensive practice should produce another learning curve starting from the present plateau.

While only suggestive at best several additional impressions may

TABLE 8  
MEANS AND (STANDARD DEVIATIONS) OF SIX ACCURACY SCORES FOR THE RECALLS OF THE WHO  
SHALL GO STORY UNDER VARYING NUMBERS OF REPETITIONS OF THE STIMULUS STORY

	Number of Repetitions				
	1	2	3	4	5
2.	15.13 ( 4.57)	21.40 ( 5.06)	23.00 ( 5.41)	25.40 ( 4.64)	26.53 ( 6.07)
3.	3.87 ( 1.89)	5.33 ( 1.82)	6.53 ( 2.82)	7.46 ( 3.14)	9.06 ( 2.97)
4.	7.20 ( 1.90)	9.60 ( 2.00)	9.93 ( 2.08)	11.33 ( 2.02)	11.26 ( 2.05)
5.	22.40 ( 5.71)	37.40 ( 8.78)	45.86 ( 16.93)	52.40 ( 13.57)	55.20 ( 14.29)
6.	98.60 ( 29.79)	133.87 ( 24.22)	139.80 ( 27.96)	146.86 ( 18.82)	146.13 ( 24.55)
7.	70.80 ( 17.95)	102.40 ( 21.40)	130.20 ( 27.12)	135.26 ( 17.14)	135.73 ( 23.82)

TABLE 9  
MEANS AND (STANDARD DEVIATIONS) OF SIX ACCURACY SCORES FOR THE RECALLS OF THE WAR  
OF THE GHOSTS STORY UNDER VARYING NUMBERS OF REPETITIONS OF THE STIMULUS STORY

	Number of Repetitions				
	1	2	3	4	5
2.	31.53 ( 8.77)	38.47 ( 5.77)	51.13 ( 5.74)	50.53 ( 12.24)	62.33 ( 8.70)
3.	9.20 ( 3.26)	11.93 ( 2.79)	15.93 ( 2.17)	17.06 ( 5.05)	19.20 ( 4.47)
4.	13.73 ( 4.20)	16.80 ( 3.31)	18.46 ( 2.98)	19.60 ( 4.77)	20.60 ( 4.64)
5.	54.33 ( 15.32)	74.20 ( 15.73)	111.66 ( 17.16)	112.40 ( 29.23)	137.00 ( 10.99)
6.	175.87 ( 37.36)	203.53 ( 31.36)	230.20 ( 23.74)	223.60 ( 46.30)	261.53 ( 30.22)
7.	143.20 ( 33.27)	176.47 ( 26.09)	221.06 ( 23.66)	212.53 ( 47.42)	243.60 ( 34.56)

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Taxes and  
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of the  
County of  
Hampden  
for the  
Year  
1888



## A PSYCHOANALYTIC INTERPRETATION OF SENSORY DEPRIVATION<sup>1</sup>

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In an exposition and critique of Freud's theory of the "mental apparatus," Nuttin (1956) has attempted to show how the psychoanalytic concept of energy discharge is inadequate for explaining human motivation. Freud postulated that one of the major aims of the mental apparatus is the reduction of stimulation and tension. This formulation was derived from Fechner's constancy hypothesis, which implies the maintenance of an equilibrium of physical forces existing within a closed energy system. The organism must maintain a certain "level of excitation" (Breuer & Freud, 1936), and consequently must eliminate any increase in stimulation. The infant, operating according to the primary process, attempts to satisfy this aim by fantasizing the object required for the reduction in tension. Thus, for the hungry infant, the imagined food object is satisfying. This attempt at satisfaction becomes clearly maladaptive, however, as it does not fulfill the basic biological needs and only partially reduces the state of tension. The infant eventually learns that a better way to achieve the reduction in tension is to obtain the object itself. The infant thus learns to operate within the secondary process, where interaction with the external reality replaces a state of primary narcissism. As this interaction takes place, the infant develops a phenomenological separation between subject and object, and the ego becomes established as the mediator between instinctual needs and the environment. Although the ego now becomes the mechanism through which the individual satisfies his needs, the *aim* of the instincts remains the same; *viz.*, the reduction of the tension.

Nuttin discusses what he sees as a contradiction between psychoanalytic theory and learning theory. Analytic theory postulates that the infant operating within the primary process attempts to satisfy his needs by hallucinating the required object. Learning theory allegedly offers contradictory evidence in that it has shown "... satisfying objects influence the organism's behaviour, not by eliciting images, but by making the organism more ready to execute the rewarding behavioural reactions themselves" (Nuttin, 1956, p. 171). This argument is both inappropriate and illogical theoretically. Learning theory is behavioristic in both its formulation and methodology, and little or no attention is paid to the direct measurement of such non-observable phenomena as images and hallucinations. The reason learning theorists have not *found* anything

<sup>1</sup> The author would like to thank Philip A. Goldberg for his critical evaluation of this paper.

with respect to images may be expected by the fact that they have not *looked*. Further, the statement above by Nuttin erroneously suggests that psychoanalytic theory would maintain that presenting an individual with a satisfying object gives rise to an hallucination of this object. According to analytic theory, the very fact that the object itself is obtained obviates the necessity for the hallucination. It is this very move away from hallucinatory behavior that in fact marks the move away from the primary process.

Nuttin offers the results of the McGill studies on sensory deprivation (Bexton, Heron, & Scott, 1954; Heron, Doane, & Scott, 1956) as evidence for the inadequacy of the primary process and energy discharge as explanatory concepts. In these studies, subjects were required to lie in bed for 24 hours a day, being permitted to get up only for meals and toilet needs. Translucent goggles eliminated pattern vision, allowing for only diffuse visual stimulation; gloves and cardboard cuffs were used to reduce tactual stimulation and masking sounds from earphones limited auditory stimulation. Though the subjects were paid \$20 a day, many refused to continue with the experiment after two or three days. In addition, subjects reported emotional lability, difficulty in focusing, and actual visual hallucinations as a result of the sensory deprivation. These findings are interpreted by Nuttin as demonstrating that man's "... need for cognitive and behavioural dealings with objects seems to be a basic one, not merely a detour process" (1956, p. 174). Rather than offering the results of the sensory deprivation studies as evidence for the inadequacies of some of Freud's concepts, it appears more appropriate to use psychoanalytic theory to *explain* these findings.

To begin with, it should be kept in mind that increased stimulation requiring elimination can come from two sources: external stimulation and internal tension. Whether the stimulation be external or internal, the principle of energy discharge still applies; i.e. the tension must be reduced. Now let us see how psychoanalytic theory would describe what happens when an individual is deprived of sensory stimulation. In such a deprivation condition, environmental supports with which the ego previously has tested reality are removed, and ties with reality consequently are weakened. Following this there occurs a weakening of the ego-environment distinction, and an eventual decrease in ego functioning. A state of primary narcissism has been simulated and the individual regresses toward the primary process, where hallucinatory behavior, distortion of body image, and depersonalization would be expected and predicted.

With the decrement in the ego's cognitive processes, however, there occurs a weakening of the ego's defensive mechanisms. Material which hitherto had been repressed because of its threatening nature, now begins to emerge. Because of the ego's weakened defensive processes, this threatening material begins to enter conscious awareness in its latent, undisguised form. It is the emergence of this unconscious material that becomes anxiety-provoking, and it is this anxiety that serves as a source

of stimulation — in this instance, internal stimulation. The individual strives to reduce this stimulation, but this reduction in tension is possible only with an intact, well-functioning ego. In order to increase the ego's level of functioning, the sensory deprived individual must seek environmental supports and stimulation.<sup>2</sup> Thus, many subjects find they cannot continue with the experiment; subjects who do remain in the deprivation situation often attempt to maintain their ego functioning by means of self-stimulation (e.g. singing to themselves, humming, etc.)

This formulation of the use of the environment for tension reduction is consistent with Hartmann in his discussion of the reality principle, where he explains: "The turn toward reality may also be a defense against anxieties aroused by fantasies and may serve to control anxiety. In both cases the turn to the external world and the compulsion to recognize it are still under the auspices of the pleasure principle" (1951, p. 381). This turn toward the external environment is dramatically demonstrated when an individual is awakened by a bad dream (Freud, 1933). In this case, insufficient censorship allows the latent content to emerge in an undisguised form, and the individual must return to reality as a means of control.

### CONCLUSIONS

The psychoanalytic concepts of energy discharge and primary process do not appear to have been invalidated by the results of the sensory deprivation investigations. On the contrary, the McGill studies on sensory deprivation offer positive support for psychoanalytic theory. In some interesting work done by Goldberger & Holt (1958a; 1958b), the authors have interpreted their sensory deprivation results as reflecting a regression to the primary process. Using Holt's scoring of the Rorschach (Holt, 1956) to determine beforehand the manner in which the subjects handled the primary process, Goldberger & Holt (1958b) were able to predict accurately the different reaction patterns employed in adapting to the deprivation situation.

A psychoanalytic approach to sensory deprivation appears to be fruitful in suggesting additional lines of research in this area. If the effects gotten by sensory deprivation reflect a regression toward the primary process, and if this regression is contingent upon the reduction of environmental supports, it should be possible to prevent such a regression by allowing the subject to maintain some contact with his environment. For example, a situation can be set up whereby visual and auditory stimulation is limited, but where the subject retains some environmental contact by tactually performing spatial orientation tasks. The sensory modality which the subject uses to maintain contact with the environment could systematically be varied. Thus, other conditions

<sup>2</sup> The results of a preliminary investigation by the present author suggest that there may be an initial attempt to increase ego processes after the removal of environmental supports. This finding would be consistent with the explanation that the individual in this situation strives to keep the emerging threatening material below the level of awareness. Stated in more analytic terminology, there is an increase in counteractixis to oppose the emerging id impulses.

might consist of retaining contact by means of auditory cues, but limiting visual and tactual stimulation, as well as a condition allowing only visual contact and limiting auditory and tactual cues. Results from such a study would give information regarding the relative importance of the various sensory modalities in interacting with the environment. Another interesting variable for investigation would be the duration of deprivation. One would expect an initial mobilization of ego processes resulting from the threat involved in the removal of environmental supports. After longer periods of deprivation, however, the weakening of the ego-environment distinction should result in a decrement in cognitive processes. These suggestions for future research represent but a few hypotheses stemming from the psychoanalytic approach to sensory deprivation.

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## EXPERIMENTAL DEMONSTRATION OF THE FALLACY OF CERTAINTY<sup>1</sup>

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The preconceptions or prejudices of students may impede the progress of the class as a whole and most certainly result in difficulty for some individuals. An instructor is often faced with the task of weakening or destroying at least some of the prejudices of his class in the process of teaching the course material. The problem is usually faced on the basis of the particular issues as they arise. However, aside from teaching the specific material for the course, an instructor is in some measure concerned with the problem of developing in his students a general point of view which is broader than that of the uneducated person and less rigidly held.

An "educated man," it is hoped, will as a result of the process of learning the material in the courses he happens to elect in college come to "learn how to learn." One of the requirements of this "learning to learn" is that the individual come to recognize both the value and the limitations of his own previous experience and judgments and bring to new problems and studies fewer biases and prejudices, or at least recognize that he has such biases and hold his beliefs subject to change in accord with new evidence.

Edwin Diller Starbuck several years ago reported on his investigations and demonstrations to his classes of the low relationship between amount of accurate information on a topic and the degree of certainty with which students tend to hold their beliefs on the topic.

We members of the genus homo have nursed the delectable notion that we are essentially rational creatures. "How noble in reason, how like a god." Looking across at our cousins of the brute creation we have enjoyed the conceit that while animals are controlled by "instincts," we are guided by abstract ideas, and have the ability to think our way through life's complications. There is justification for the contention. It is, however, a truth about fifty per cent, certainly not more than fifty-five per cent value instead of the one-hundred per cent as we suppose. Animals, such as a well bred, socially privileged dog, respond with about the same nicety of "mentality" within the sphere of dogdom, as do we to our human problems and situations. Our fond conviction . . . that our lives

<sup>1</sup> This paper was read as a portion of a symposium on Teaching Methods at the American Psychological Association Meetings, 1957.

are controlled by a stock of clear ideas and that we think out the patterns of conduct and belief, tends to rate as about ten per cent truth rather than a ninety per cent variety.

E. D. Starbuck (1945), p. 1)

The present project took Starbuck's work as a point of departure. It has been conducted both in classes in Introductory Psychology and Social Psychology for the purpose of weakening the tendency of class members to make absolute judgments and to encourage them to be a little more intellectually self-critical and more objective and tentative in their beliefs.

The procedure used has been to present the students with a mimeographed list of numbered statements to judge as true or false. These statements have sometimes been on psychological topics and sometimes not. The statements were prepared by the instructor with the hope of achieving a list which every student would feel in some manner qualified to judge but which would result in as many differences as possible within the class.

The students were read the following instructions: "For the questions before you, please specify in each case whether the statement given is true or false. Then using a five-point scale, rate your certainty in each instance. Specify 'A' for absolute certainty, as that the sun is shining somewhere; 'B' for a high degree of certainty, such as that the United States Government will last for at least ten more years; and so on to 'E,' standing for a pure guess, as one would designate his certainty that it will be raining in Richmond a year from today at ten o'clock in the morning."

After all the students had completed the form, the answers were collected. At the next class period the students were presented with a tabulation of the class results: the number who had answered 'true' and the number who had answered 'false' to each question and the number giving the various certainties in each instance.

At the time the results were returned to the students, the class was not informed of the instructor's judgments as to which answers were "correct" but encouraged the check on the correct answers for themselves.<sup>2</sup>

On almost every item we found the students disagreeing with each other and holding their contradictory judgments with a high degree of certainty. Mode and median certainties of the students over the years giving the answers which the instructor had prejudged as 'correct' came out to 'B.' Mode and median certainties of the students over

<sup>2</sup> Procedure has varied on this. In some instances, when sufficient time was available, discussion of the available evidence and the instructor's opinion did later occur.

TABLE 1.  
EXAMPLES OF ITEMS USED AND RESULTS OBTAINED

(The number of answers tabulated varies from question to question as a result of the fact that the items used have varied from class to class and occasionally a student would leave an item unanswered.)

ITEM	ANSWER	CERTAINTY					TOTAL
		A	B	C	D	E	
Emotional expression can be judged more accurately from the mouth than from the eyes	True	6	14*	13	3	3	39
	False	16	37*	31	8	22	104
Chess playing develops concentration	True	17	43*	32	12	5	109
	False	6	15*	10	3	1	35
Sunday school training improves character	True	11	36	47*	5	3	102
	False	6	15*	14	3	3	41
Man is a naturally competitive creature who has attained his present high estate through competition; and if he is to make any progress, he must continue to compete.	True	8	20*	15	4	2	49
	False	8	16*	11	5	1	41
There are many discontented people in Russia and one of the main ways in which we may be able to defeat them in the "Cold War" is to bring about a revolt.	True	5	4	20*	6	5	40
	False	7	12	18*	5	2	44
Soviet citizens elect their representatives who in turn carry on the work of government under a system in many ways similar to that of the United States or Great Britain, especially at city and district levels.	True	4	10	15*	11	6	46
	False	4	9	10*	9	6	38
Religious worship has vanished (or is vanishing) in Russia.	True	3	17*	10	4	1	35
	False	15	14*	14	5	1	49

\* median certainty



the years giving the answers judged 'incorrect' have also both come out to 'B' certainty. In some individual classes and on individual items both the modes and medians varied. For items the variation has been across the whole scale; for classes the median and mode have always both been 'B' or 'C.' The proportion of the correct vs. incorrect answers given various levels of certainty are in general approximately the same on an item for a class.

### SUMMARY

Within a small homogeneous group of college students there were disagreements held with a very high degree of certainty on both sides even on issues of seemingly determinable fact. In each instance one side or the other must seemingly be in error despite the reported certainties.

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The Psychological Record, 1960, 10, 219-223.

## FIXATION AND DECREMENT TO THE MULLER-LYER FIGURE<sup>1</sup>

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Köhler and Fishback (1950) predict that fixation of the Müller-Lyer figure will produce greater satiation, and hence more rapid disappearance of the illusion than will non-fixation (freely roving eye) which will produce statistical satiation at a slower rate. Indeed, they explain the rapid decrement exhibited by their Ss, in contrast to the results of earlier studies, on the basis of their Ss having been instructed to fixate the figure.

In two investigations Mountjoy (1958 a & b) obtained results which differed from those of Köhler and Fishback in certain respects, and which were interpreted as supporting an habituation hypothesis instead of the satiation hypothesis. It was therefore decided to investigate the relative roles of fixation and roving eye conditions in an attempt to determine whether the discrepancies in results were due to this procedural detail.

At the same time it appeared worthwhile to test both the satiation and the habituation hypotheses by varying the position of the fixation point. If a fixation point at the apex of the arrowheads comprising the Müller-Lyer figure produced more rapid decrement than the roving eye condition, this fact could be explained on several bases. One possibility is the more rapid development of satiation hypothesized by Köhler and Fishback. Alternatively, the same result might be interpreted as supporting the habituation hypothesis since the fixation point could be regarded as lowering the probability of the occurrence of competing responses through restriction of the range of S's responses.

If satiation is the responsible mechanism, then a fixation point *not* at the apex of the arrowhead should produce as rapid decrement as the fixation point at the apex, especially if S is not allowed to move his eyes from the fixation point during adjustment of the figure. If an habituation process is occurring, then the fixation point *not* on the apex could interfere with the decrement process. Obviously, less decrement in this condition could also be interpreted as indicating the presence of other explanatory variables.

The satiation hypothesis then predicts that both fixation point conditions will exhibit more rapid decrement than the roving eye con-

<sup>1</sup>This investigation was supported by research grant M-2398 from the National Institute of Mental Health, National Institute of Health, Bethesda, Maryland, and by the Denison University Research Foundation.

dition. The habituation hypothesis predicts that although a fixation point at the apex of the arrowhead may produce more rapid decrement than the roving eye condition, a fixation point which distracts S from the apex may interfere with the occurrence of decrement. Absence of statistically significant differences will be interpreted as being compatible with the habituation hypothesis.

## METHOD

### *Subjects*

Each of 54 introductory psychology students was assigned randomly to one of three experimental conditions.

### *Apparatus*

The Brentano figure (modified by omission of the connecting longitudinal line) was presented in an apparatus which has been described elsewhere (Mountjoy, 1958 a & b, 1960). The fixation point consisted of a metal washer ( $\frac{3}{8}$  inch diameter) suspended directly in front of the figure, either at the apex or at the top of the tail of the center arrowhead of the figure.

### *Procedure*

*Day One.* A measurement of initial illusion magnitude was obtained for each S, in the guise of a "practice trial" with no fixation point and a 5-sec. adjustment period. All Ss were instructed to set the apexes equal and to tap a telegraph key once each second when the shutter was closed. For 36 Ss the fixation point was inserted in front of the center arrowhead before trial two was administered. For 18 Ss the fixation point was at the apex (center fixation point group), and for the other 18 it was at the top of the tail (high fixation point group). These 36 Ss were instructed to fixate the washer whenever the figure was exposed, including the 5-sec. adjustment period, and warned that they would be interrogated concerning fixation at the end of each session. The 18 roving eye Ss were instructed merely to observe the figure whenever it was exposed.

An additional 30 trials were then given to all Ss under conditions of a 20-sec. exposure period, a 5-sec. adjustment period, and a 5-sec. intertrial interval.

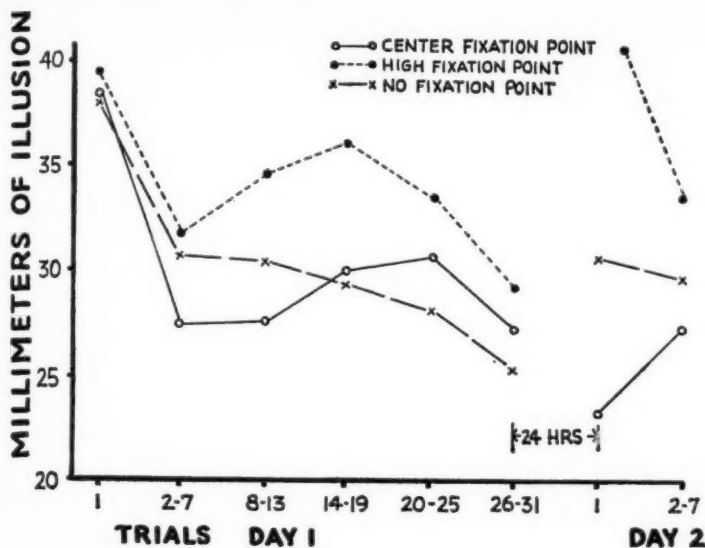
*Day Two.* Each S received a "practice trial" (5-sec. adjustment period) under the appropriate conditions of fixation or roving eye. An additional six trials were administered with 20-sec. exposure period as on the previous day.

All Ss were then interrogated concerning their knowledge of the illusion figure, and asked not to discuss the experiment with other students.

## RESULTS AND DISCUSSION

A *t*-test between the initial ("practice") trial of Day One for the three groups was not significant, indicating no systematic sampling

error. When interrogated concerning fixation, Ss indicated that they were able to obey the instructions.



#### Analysis of Variance

Trial One of Day Two was included in the analysis of variance for repeated measures carried out on the blocks of trials. The  $F$  values for groups, blocks and blocks X groups interaction did not attain the .05 level of confidence. Because inspection of Figure 1 indicated the existence of rather large differences between the high fixation point group and the other two groups, it was desirable to conduct *post hoc* analyses.

Comparison of the high fixation point group and the roving eye group yielded an  $F$  value for blocks significant beyond the .01 level. The values for groups and block X groups interaction effects were not statistically significant.

Comparison of the center fixation point group and the high fixation point group indicated that the null hypothesis could be rejected between the .05 and .01 level for the blocks X groups interaction. The groups and blocks effects were not statistically significant.

It may be concluded that the present data do not support the satiation hypothesis, but are compatible with the habituation hypothesis, since the presence of a fixation point did not produce statistically greater decrement in either position. In no case did the  $F$  values for groups approach significance. The present data are in agreement with

the report of Selkin and Wertheimer (1957) that mere fixation of the figure does not produce decrement.

### *Single Group Analysis*

Analyses of individual groups were carried out by *t* for paired measures in order to evaluate performance on Day One and Day Two separately, and especially the effects of the 24-hour interval between sessions. The analyses are summarized in Table 1 and were considered to be two-tailed tests.

TABLE 1  
ANALYSIS OF GROUP PERFORMANCES ON DAY ONE,  
RECOVERY INTERVAL, AND DAY TWO

	Center Fixation Point	High Fixation Point	Roving Eye
Day One	2.90**	3.59**	3.77**
Recovery Interval	0.72	4.15**	2.23*
Day Two	0.77	2.61*	0.79

\* Significant at .05 level (2.110, *df*=17)

\*\* Significant at .01 level (2.898, *df*=17)

*Day One.* Trial one of Day One was compared to the last block of trials on Day One. The null hypothesis could be rejected at the .01 level for the center fixation point group, and beyond the .01 level for the other two groups.

*Recovery Interval.* The last block of trials of Day One was compared to trial one of Day Two.

The habituation hypothesis predicts the occurrence of spontaneous recovery during the interval between sessions. Significant recovery occurred for both the high fixation point group and the roving eye groups.

The satiation hypothesis predicts further decrement during the recovery interval. The center fixation point group did exhibit decrement, but this was statistically non-significant and may be regarded as experimental error rather than as a true difference.

Statistical verification of the occurrence of spontaneous recovery supports the habituation hypothesis and validates results previously reported by Mountjoy (1958 a & b).

*Day Two.* Trial one of Day Two was compared to the succeeding block of trials of Day Two. Only the high fixation point group exhibited statistically significant decrement.

*Sophistication Concerning the Illusion*

On the basis of replies to a standard set of questions, Ss were categorized as either sophisticated (those who were able to describe the illusory effect) or naive (those who were not able to verbalize the illusory effect). There were 15 naive and 39 sophisticated Ss. All Ss were further dichotomized as either exhibiting decrement or not for Day One, the recovery interval, and Day Two. Chi-square contingency tests were calculated for each of the three classifications, and none of them approached statistical significance. The independence of naivete and decrement validated Mountjoy's (1958 a & b) previous findings and indicated that it is not necessary to use only naive Ss as did Köhler and Fishback.

## SUMMARY AND CONCLUSIONS

Comparisons of decrement to the Müller-Lyer figure under conditions of fixation point and roving eye were interpreted as supportive of the habituation hypothesis and not supportive of the satiation hypothesis.

Fixation points did not produce statistically significant effects.

Statistically significant spontaneous recovery did occur.

Sophistication and naivete concerning the figure were unrelated to the occurrence of decrement.

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TEACHING MACHINES, INC. *Descriptive statistics*. Albuquerque, 1960. About 850 stimulus panels (460 pp).

"Figure A is a statistical graph called a (wds) \_\_\_\_\_ since it shows the (wd) \_\_\_\_\_ of occurrence of events. Figure B is a graph called a (wds) \_\_\_\_\_ which shows the (wd) \_\_\_\_\_ between two measures."

The foregoing is from *stimulus* panel 69 of this unique "Programmed Textbook." The student writes his responses on an answer sheet, then turns the page to *response* panel 69 where he finds that he has correctly answered: "frequency polygon/frequency distribution;" "frequency;" "scatter diagram;" "correlation." He then goes on to panel 70.

To understand how this text is constructed, a bit of history is in order. Teaching Machines, Inc., was organized by four experimental psychologists, one of whom (L. E. Homme) worked on B. F. Skinner's original project on automated teaching. Skinner has pointed out that traditional textbooks and lecture methods violate many of the principles of learning derived from experimental studies of behavior. The "Programmed Textbook" is one attempt to develop an efficient self-teaching device on the basis of these principles. First, as the authors state in their introduction:

"Learning should be fun. However, in the early stages of learning a subject like statistics, students make many mistakes. As a result, they often conclude that they do not like statistics. They would be more correct to conclude that they do not like to make errors. . . . Recent developments in psychology and education have demonstrated that students can proceed to mastery of a subject with a negligible number of errors along the route. . . . The basic idea is that the most efficient, pleasant and permanent learning occurs when the student proceeds through a course by a large number of small, easy-to-take steps."

This prevention of errors by a carefully programmed series of small steps is facilitated by the use of many interesting devices. One is the "formal prompt," which essentially takes advantage of the phenomenon of stimulus generalization. Thus in panel 69 the easy response, "frequency," to the second blank serves as a cue to the student who has difficulty with the first blank. In later panels involving these concepts such cues "fade" out so that the student learns to recall on the basis of relations in the material, without crutches.

Second, the most effective learning situation is one in which the student is an active participant. This is a point on which traditional textbooks and lectures are apt to be particularly weak. The "Programmed Textbook" requires that the student compose his answers as each panel is presented. Inadvertant noticing of answers is eliminated by having them on the next page, and cheating has been found to occur very rarely (one reason is that the student is almost always correct anyhow).

Third, learning is most rapid and accurate when there is immediate knowledge of results. This is accomplished by the small steps of the program in conjunction with the reinforcement available simply by turning the page.

A most impressive point is that *Descriptive Statistics* has been through a process of thorough revisions *before* first publication, based on *student responses* to the program. The small discrete units of the program are especially amenable to such an experimental analysis since weaknesses can be easily pinpointed and corrected. It should be noted that such a method insures that the student will learn *and retain* the material since many of the items include review of previous material (when students make errors the program is revised).

The text is organized into 10 units and gives a thorough coverage of topics in descriptive statistics. Unit One covers basic concepts, among which are frequency distributions, measures of central tendency and variability, correlation and regression, skewed and symmetrical distributions, the normal curve, statistical inference from samples, and biased and random samples. The other nine units are elaborations on these topics (except inference). I particularly like the following features:

1. Emphasis is placed on understanding and use of statistical techniques, and interrelationships among concepts, rather than rote learning of formulas and names.

2. The pain of the student when faced with mathematical equations has been eased. Reviews of algebraic operations are introduced at appropriate points, and manipulation of statistical symbols is learned by a gradual sequence of items of increasing complexity. By the end of the book the student has derived the various raw score formulas for the variance and correlation (including rank-order correlation). He is also at home with  $z$ -scores and various uses of the normal probability table.

3. The use of this self-instruction text should free considerable class time for more detailed consideration by the instructor of special topics, applications, and statistical inference. The authors neglected to give the time it usually takes the student to complete a unit (one measure they could use would be the \_\_\_\_). This information would be very helpful to the instructor in planning a course. On the basis of



a teaching machine program I have used in general psychology, and taking into account the estimated relative difficulty of the panels and extrapolating linearly, I would guess that college students should finish the program in about 24 hours working time. *Statistical Inference*, Volume Two of TMI's programmed series in statistics will be available at the end of August.)

It would be helpful if TMI offered the 10 units bound separately rather than in one volume, particularly for the instructor who places the material on library reserve, since one of the goals of a self-teaching device is to make it possible for students to work at a rate convenient to them. However, the units can be separated for this purpose without too much difficulty.

This is an excellent text for the descriptive portion of a course in statistics. Several investigators have found that similar approaches in other courses are appreciated by both the instructor and students. I urge instructors to conduct their own experiments by trying out this and other modern automated teaching techniques that are rapidly being made available. Present-day research indicates that these techniques show considerable promise of reducing the bind in which education is finding itself more and more these days—too many students and not enough teachers or money. If these methods measure up to preliminary indications of their usefulness we shall be able to teach more to more students while decreasing the ratio of instructors to students. "Elementary" courses can be conducted at a more interesting level of difficulty and scope. It should be more fun.

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